PRELIMINARY DRAFT:
PROPOSED CHANGES TO
APPLIANCE EFFICIENCY REGULATIONS FOR

(a) REFRIGERATORS, REFRIGERATOR-FREEZERS AND FREEZERS

(b) ROOM AIR CONDITIONERS

(c) CENTRAL AIR CONDITIONERS

(d) SPOT AIR CONDITIONERS

(e) GAS SPACE HEATERS

(f) WATER HEATERS

(g) POOL HEATERS

(h) PLUMBING FITTINGS

(i) PLUMBING FIXTURES

(j) FLUORESCENT LAMP BALLASTS

(k) LAMPS

(l) DISHWASHERS

(m) CLOTHES WASHERS

(n) CLOTHES DRYERS

(o) KITCHEN RANGES AND OVENS

(p) TELEVISION SETS

(q) ELECTRIC MOTORS

(r) LIGHTING CONTROL DEVICES

(s) DEMAND VENTILATION CONTROL DEVICES

California Code of Regulations

Title 20, Sections 1601 – 1608

AND CORRESPONDING CHANGES TO BUILDING STANDARDS IN TITLE 24, PART 6, SECTIONS 110-119

California Energy Commission Staff

September 30, 1999 - DRAFT

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CALIFORNIA CODE OF REGULATIONS
TITLE 20, CHAPTER 2
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ARTICLE 4: APPLIANCE EFFICIENCY REGULATIONS

Section 1601. Scope.

This article applies to the following types of new appliances, if they are sold in California or installed in Title 24 construction, except those sold wholesale in California for final retail sale outside the state and those designed and sold exclusively for use in recreational vehicles and other mobile equipment.

(a) Refrigerators, refrigerator-freezers, and freezers, including but not limited to refrigerated bottled or canned beverage vending machines, which can be operated by alternating current electricity, excluding the following types:

(1) those refrigerators and refrigerator-freezers with total refrigerated volume exceeding 39 ft^3;
(2) those freezers with total refrigerated volume exceeding ft^3;
(3) those designed to be used without doors; and
(4) remote refrigerators, refrigerator-freezers, and freezers.

(b) Room air conditioners, room air conditioning heat pumps, packaged terminal air conditioners, and packaged terminal heat pumps

(c) Central air conditioners, which are:

(1) unitary air conditioners and heat pumps, except those designed to operate without a fan,
(2) condensing units, and
(3) water chilling packages.

(d) Spot air conditioners.

(e) Vented gas and oil space heaters, including but not limited to gas-fired combination space heating and water heating equipment.

Note: See Health and Safety Code Section 19881 for restrictions on the sale of unvented gas and oil heaters.

(f) Water heaters.

(g) Gas, oil, electric resistance, and heat pump pool heaters.

(h) Plumbing fittings, which are showerheads, lavatory faucets, kitchen faucets, metering faucets, replacement aerators, wash fountains and tub spout diverters.

(i) Plumbing fixtures, which are toilets and urinals.

(j) Fluorescent lamp ballasts designed:

(1) to operate at nominal input voltages of 120 or 277 volts;
(2) to operate with an input current frequency of 60 Hertz; and
(3) for use in connection with T5, T8 and T12 lamps.

(k) Lamps, which are general service fluorescent lamps and incandescent reflector lamps.

(l) Dishwashers that are federally regulated consumer products.

(m) Clothes washers that are federally regulated consumer products.

(n) Clothes dryers that are federally regulated consumer products.

(o) Kitchen ranges and ovens that are federally regulated consumer products.

(p) Television sets that are federally regulated consumer products.

(q) Electric motors, excluding definite purpose motors, special purpose motors and motors exempted by the US Department of Energy under EPAct.

(r) Lighting control devices, which are automatic time switch control devices, occupant-sensing devices, automatic daylighting control devices, lumen maintenance control devices, and interior photocell sensor devices.

(s) Demand ventilation control devices, which are automatic carbon dioxide sensors and automatic volatile organic compound sensors.

Section 1602 Definitions and Rules of Construction.

Rules of Construction.

(1) Where the context requires, the singular includes the plural and the plural includes the singular.

(2) The use of "and" in a conjunctive provision means that all elements in the provision must be complied with, or must exist in order to make the provision applicable. Where compliance with one or more elements suffices, or where the existence of one or more elements makes the provision applicable, "or" (rather than "and/or") is used.

(3) "Shall" is mandatory and "may" is permissive.

Definitions. In this article the following definitions apply:

(a) General.

"Accessible place" means…

"AHAM" means the Association of Home Appliance Manufacturers.

"ANSI" means the American National Standards Institute.

"ARI" means the Air-Conditioning and Refrigeration Institute.

"ASHRAE" means the American Society of Heating, Refrigerating and Air-Conditioning Engineers.

"Basic model of a federally regulated consumer product" means "basic model" as defined in 10 CFR 430.2. "Basic model" of any other appliance means all units of a given type of appliance (or class thereof) manufactured by one manufacturer and which have the same primary energy source, which have electrical characteristics that are essentially identical, and do not have any differing physical or functional characteristics that affect energy consumption.

"British thermal units" means British thermal unit.

"Certification program" means…

"Certify" means…

"CFR" means Code of Federal Regulations.

"Commission" means the California Energy Commission.

"Database" means the database established pursuant to Section 1605(d).

"Date of sale" means the day when the appliance is physically delivered to the buyer.

"Design standard" means a prescriptive standard, such as a ban on constant burning pilots or a requirement that a lighting control have a particular feature.

"Energy efficiency standard" means a performance standard expressed in numerical form, such as energy factor, EER or thermal efficiency.

"EPAct" means the Energy Policy Act of 1992, 42 U.S.C. Section 6311 et seq.

"Federally-regulated commercial and industrial equipment" means any one or more of the appliances regulated by EPAct, which are small commercial packaged air conditioners, large commercial packaged air conditioning and heating equipment, packaged terminal air conditioners and packaged terminal heat pumps, warm air furnaces and packaged boilers, storage water heaters, instantaneous water heaters, unfired hot water storage tanks, and electric motors.

"Federally-regulated consumer product" means an appliance that is regulated by which are **{LIST}**.

"GAMA" means the Gas Appliance Manufacturers Association.

"IEEE" means the Institute of Electrical and Electronic Engineers.

"Manufacturer" means any person engaged in the original production or assembly of an appliance. For plumbing fittings, "manufacturer" also means a private brand packager or reassembler.

"Model number" means a combination of letters and digits representing the manufacturer, brand, design and performance of an appliance, which appears on the nameplate of the appliance or elsewhere on the appliance if the appliance bears no nameplate.

"NAECA" means the National Appliance Energy Conservation Act, 42 U.S.C. Section 6291 et seq.

"NEMA" means the National Electrical Manufacturers Association.

"Non-federally regulated appliance" means an appliance that is within the scope of Section 1601 and that is neither federally-regulated commercial and industrial equipment nor a federally-regulated consumer product.

"Report" means…

"Title 24 construction" means building construction that is within the scope of Section 100 of Subchapter 1 of Part 6 of Title 24 of the California Code of Regulations and for which a building permit is required under Section 10-103(d)1 of Article 1 of Part 1 of Title 24 of the California Code of Regulations.

(b) Refrigerators, Refrigerator-Freezers, and Freezers.

"Automatic defrost system" means a defrost system in which the defrosting action for all refrigerated surfaces is initiated and terminated automatically.

"Commercial refrigerator" means a refrigerator, refrigerator-freezer, or freezer, that is not a federally-regulated consumer product.

"Freezer" means a cabinet designed as a unit for the freezing and storage of food or ice at temperatures of 0°F or below and having a source of refrigeration requiring an energy input.

"Manual defrost system" means a defrost system in which the defrosting action for all refrigerated surfaces is initiated manually.

"Partial automatic defrost system" means a defrost system in which the defrosting action for the refrigerated surfaces in the refrigerator compartment is initiated and terminated automatically and the defrosting action for the refrigerated surfaces in the freezer is initiated manually.

"Refrigerator" means a cabinet designed for the refrigerated storage of food, including but not limited to solid food and wine, beer and other beverages, at temperatures above 32°F, and having a source of refrigeration requiring an energy input. It may include a compartment for the freezing and storage of food at temperatures below 32°F, but does not provide a separate low temperature compartment designed for the freezing and storage of food at temperatures below 8°F.

"Refrigerated bottled or canned beverage vending machine" means

"Refrigerator-freezer" means a cabinet which consists of two or more compartments with at least one of the compartments designed for the refrigerated storage of foods, including but not limited to solid food and wine, beer and other beverages, at temperatures above 32°F, and with at least one of the compartments designed for the freezing and storage of food or ice at temperatures below 8°F which may be adjusted by the user to a temperature of 0°F or below. The source of refrigeration requires energy input.

"Remote refrigerator, refrigerator-freezer, or freezer" means a refrigerator, refrigerator-freezer, or freezer that:

~~(A) cannot physically be tested using the test method specified in Section 1603 (a) without modifying the test method;~~

~~(B)~~(A) receives refrigerant fluid from a condensing unit located externally to its cabinet assembly and

~~(C)~~(B) is capable of being purchased and installed with different types of compressor or condenser, so that its efficiency depends on the type of compressor or condenser applied by the purchaser, installer, or user.

"Wine chiller" means a refrigerator designed specifically for the cooling and storage of wine or other beverages.

(c) Air Conditioners.

"Central air conditioner" means an air-conditioner which is not a room air conditioner.

"Central air-conditioning heat pump" means a central air conditioner which is capable of heating by refrigeration, and which may or may not include a capability for cooling.

"Condensing units" means

"Coefficient of Performance (COP)" of a heat pump means the ratio of the rate of useful heat output delivered by the complete heat pump unit (exclusive of supplementary heating) to the corresponding rate of energy input, in consistent units and under operating conditions specified in Section 1603(b) and (c)~~. Btu shall be converted to kilowatt-hours at the rate of 3412 Btu per kilowatt-hour.~~

"Cooling capacity" means a measure of the ability of a unit to remove heat from an enclosed space under test conditions specified in Section 1603(b) and (c).

"db" means dry bulb temperature.

"Energy efficiency ratio (EER)" means the ratio of the cooling capacity of the air conditioner in Btu per hour, to the total electrical input in watts under test conditions specified in Section 1603(b) and (c).

"Ground source heat pump" means a heat pump that uses fluid circulated through a subsurface piping loop as a heat source or heat sink.

"Ground water-source heat pump" means one or more factory-made assemblies that normally include an indoor conditioning coil with air-moving means, compressor(s) and refrigerant-to-water heat exchangers including means to provide a heating function and may include a cooling system.

"Heating Seasonal Performance Factor (HSPF)" means the total heating output of a central air-conditioning heat pump with cooling capacity less than 65,000 Btu per hour in Btu during its normal usage period for heating divided by the total electrical energy input in watt-hours during the same period, as determined using the test procedure specified in Section 1603(c).

"Integrated Part Load Value (IPLV)" means …

"Packaged terminal air conditioner" means a wall sleeve and a separate unencased combination of heating and cooling assemblies specified by the builder and intended for mounting through the wall. It includes a prime source of refrigeration, separable outdoor louvers, forced ventilation, and heating availability by builder's choice of hot water, steam, or electricity.

"Packaged terminal heat pump" means a packaged terminal air conditioner that utilizes reverse cycle refrigeration as its prime heat source and has supplementary heat source available to builders with the choice of hot water, steam, or electric resistance heat.

"Room air conditioner" means a factory encased air conditioner designed as a unit for mounting in a window or through a wall or as a console. It is designed for delivery of conditioned air to an enclosed space without ducts.

"Room air-conditioning heat pump" means a room air conditioner, which is capable of heating by refrigeration, and which may or may not include a capability for cooling.

"Seasonal energy efficiency ratio (SEER)" means the total cooling output of an air-cooled central air conditioner with cooling capacity less than 65,000 Btu per hour in Btu during its normal usage period for cooling divided by the total electrical energy input in watt-hours during the same period, as determined using the test procedure specified in Section 1603(c).

"Single package central air conditioner" means a central air conditioner which is not a split system central air conditioner.

"Split system central air conditioner" means a central air conditioner consisting of two or more major components; including a compressor-containing unit, normally installed outside the building, and a non-compressor-containing unit, normally installed within the building.

"Unitary air conditioner" means one or more factory made assemblies which include an evaporator or cooling coil and an electrically driven compressor and condenser combination, and may include a heating function.

<u>"Water chilling package" means…</u>

"Water-source heat pump" means one or more factory-made assemblies which normally include an indoor conditioning coil with air-moving means, compressor(s) and refrigerant-to-water heat exchangers including means to provide both cooling and heating or cooling only function.

<u>"wb" means wet bult temperature.</u>

(d) Spot Air Conditioners.

"Cooling efficiency ratio" means the efficiency of a spot air conditioner obtained by dividing the sum of the cooling capacity and fan electrical input in Btu per hour by the total electrical input in watts.

"Spot air conditioner" means an air conditioner that discharges cool air into one zone within a space and discharges rejected heat back into that space where there is no physical boundary separating the discharges.

(e) Gas and Oil Space Heaters.

"Annual fuel utilization efficiency (AFUE)" of a space heater means a measure of the percentage of heat from the combustion of gas which is transferred to the space being heated during a year under conditions specified in Section 1603(e).

"Boiler" means a space heater which is a self-contained appliance for supplying steam or hot water primarily intended for space heating application.

"Central furnace" means a self-contained space heater designed to supply heated air through ducts of more than 10 inches length.

"Combination space heating and water heating equipment" means an appliance designed for both space heating and water heating.

"Duct furnace" means a space heater designed to be installed within a duct.

"Energy consumption during standby" means the energy consumed by the gas space heater when the main burner is not operating. It does not include energy consumption related to associated cooling equipment. It shall be reported in watts, based on a conversion factor of 3.412 Btu per watt-hour.

"Floor furnace" means a self-contained, floor mounted space heater without ducts.

"Hot water supply boiler" means a water heater.

"Infrared heater" means a space heater which directs a substantial amount of its energy output in the form of infrared energy into the area to be heated.

"Non-packaged boiler" means a boiler that is not a packaged boiler.

"Packaged boiler" means a boiler that is shipped complete with heating equipment, mechanical draft equipment, and automatic controls; usually shipped in one or more sections.

"Radiant coefficient" means a measure of efficiency of an infrared heater, determined by use of the test procedure specified in Section 1603 (e)~~(3)~~.

"Room heater" means a free-standing non-recessed space heater.

"Space heater" means an appliance that supplies heat to a space for the purpose of providing warmth to those objects within the space.

"Steady state efficiency" or "thermal efficiency" of a space heater means a measure of the percentage of heat from the combustion of gas which is transferred to the space being heated under steady state conditions specified in Section 1603 (e).

"Unit heater" means a self-contained fan type heater designed to be installed within the heated space.

"Unvented gas or oil heater" means a gas or oil heater designed to be used without a vent.

"Unvented room heater" means a room heater designed to be installed without a vent.

"Vented gas or oil heater" means a gas or oil heater designed to be used with a vent.

"Wall furnace" means a wall mounted, self-contained space heater without ducts that exceed 10 inches.

(f) Water Heaters.

"Heat pump water heater" means a device using the vapor compression cycle to transfer heat from a low-temperature source to a higher temperature sink for the purpose of heating potable water, including all necessary ancillary equipment fans, blowers, pumps, storage tanks, piping, and controls.

"Instantaneous water heater" means a water heater that is not a storage-type water heater or a heat pump water heater.

"Large water heater" means a water heater that is not a small water heater.

"Small water heater" means a water heater that is a gas storage water heater with an input of 75,000 Btu per hour or less, an oil storage water heater with an input of 105,000 Btu per hour or less, an electric storage water heater with an input of 12 kilowatts or less, a gas instantaneous water heater with an input of 200,000 Btu per hour or less, an oil instantaneous water heater with an input of 210,000 Btu per hour or less, an electric instantaneous water heater with an input of 12 kilowatts or less, or a heat pump water heater rated at 24 amps or less.

"Standby loss of a storage-type water heater" when expressed as a percent means the ratio of heat lost per hour to the heat content of the stored water above room temperature.

"Standby loss of a storage-type water heater" when expressed in watts per square foot means the heat lost per hour, per square foot of tank surface area.

"Storage-type water heater" means a water heater that heats and stores water within the appliance at a thermostatically controlled temperature for delivery on demand.

"Thermal efficiency" or "recovery efficiency" of a water heater means a measure of the percentage of heat from the combustion of gas which is transferred to the water as measured under test conditions specified in Section 1603 (f).

"Water heater" means an appliance for supplying hot water for purposes other than space heating or pool heating.

(g) Pool Heaters.

"Pool heater" means an appliance designed for heating nonpotable water at atmospheric pressure, including heating water in swimming pools, spas, hot tubs and similar applications.

"Readily accessible on/off switch" means

(h) Plumbing Fittings.

"Flow rate of a tub spout diverter" means the leakage through the diverter directly into the bathtub when the device is in the diverting position.

"Flow restricting mechanism" refers to a means or device to restrict the flow of water.

"Kitchen faucet" means a plumbing fitting designed for discharge into a kitchen sink.

"Lavatory faucet" means a plumbing fitting designed for discharge into a lavatory.

"Mechanically retained" means

"Metering faucet" means a faucet which, when turned on, will gradually shut itself off over a period of several seconds. It may or may not be adjustable for cycle duration.

"Plumbing fitting" means a showerhead, lavatory faucet, kitchen faucet, metering faucet, replacement aerator, wash fountain or tub spout diverter.

"Private brand packager" of plumbing fittings means any person that buys plumbing fittings from a manufacturer, packages them using its own brand name, and distributes them for sale using its own brand name.

"psi" means

"Reassembler" of plumbing fittings means any person that buys plumbing fittings from a manufacturer, modifies them, and distributes them for sale using its own brand name.

"Replacement aerator" means an aerator sold as a replacement, separate from the faucet to which it is intended to be attached.

"Showerhead" means a device through which water is discharged for a shower bath.

"Tub spout diverter" means a device to stop the flow of water into a bathtub and to divert it so that the water discharges through a showerhead.

"Wash fountain" means a lavatory designed for simultaneous use by two or more persons.

(i) Plumbing Fixtures

"Blowout toilet" means a toilet with a blowout type bowl.

"Blowout type bowl" means a nonsiphonic type toilet bowl designed for a blowout action, with integral flushing rim, a trapway at the rear of the bowl, a visible or concealed jet, a wall outlet, and, if wall mounted, a three bolt hole configuration.

"Electromechanical hydraulic toilet" means …

"Flushometer tank" means a flushometer valve that is integrated within an accumulator vessel affixed and adjacent to the fixture inlet so as to cause an effective enlargement of the supply line immediately before the unit.

"Flushometer valve" means a valve that is attached to a pressurized water supply pipe and so designed that when actuated it opens the line for direct flow into the fixture at a rate and predetermined quantity to properly operate the fixture, and then gradually closes in order to provide trap reseal in the fixture and to avoid water hammer. The pipe to which the device is connected is, in itself, of sufficient size that when open shall allow the device to deliver water at a sufficient rate of flow for flushing purposes.

"Gravity tank type toilet" means …

"Toilet" means a plumbing fixture having a water containing receptor which receives liquid and solid body waste through an exposed integral trap into a gravity drainage system.

"Trough-type urinal" means <u>a urinal designed for simultaneous use by two or more persons.</u>

"Urinal" means a plumbing fixture that receives only liquid body waste and, on demand, conveys the waste through a trap seal into a gravity drainage system.

(j) Fluorescent Lamp Ballasts.

"Ballast efficacy factor" means the ratio of the relative light output of a ballast, expressed as a percent, to the power input, expressed in watts at the test conditions specified in Section 1603 ~~(h)(2)~~(j).

"Fluorescent lamp ballast" means a device which is used to start and operate fluorescent lamps by providing a starting voltage and current and limiting the current during normal operation.

"F40T12 lamp" means a tubular fluorescent lamp which is a nominal 40 watt lamp, 48" tube length, ~~and~~ 1 1/2 inches in diameter and conforms to the standard, ANSI C78.1-1978 (R1984).

"F96T12 lamp" means a tubular fluorescent lamp which is a nominal 75 watt lamp, 96" tube length, ~~and~~ 1 1/2 inches in diameter and conforms to the standard, ANSI C78.3-1978 (R1984).

"F96T12HO lamp" means a tubular fluorescent lamp which is a nominal 110 watt lamp, 96" tube length~~, and~~ 1 1/2 inches in diameter.

"T 5 lamp" means a tubular fluorescent lamp 5/8 inches in diameter.

"T 8 lamp" means a tubular fluorescent lamp one inch in diameter.

"T12 lamp" means a tubular fluorescent lamp 1_ inches in diameter.

(k) Lamps.

"Color rendition index" means

"General service fluorescent lamp" means a general service fluorescent lamp as defined in EPAct.

"Incandescent lamp" means ~~a~~ an incandescent lamp as defined in EPAct.

"LPW" means

(l) Dishwashers.

"Dishwasher" means a cabinet-like appliance which with the aid of water and detergent, washes, rinses, and dries (when a drying process is included) dishware, glassware, eating utensils, and most cooking utensils by chemical, mechanical, or electrical means, and discharges to the plumbing drainage system.

(m) Clothes Washers.

"Automatic clothes washer" means a class of clothes washer which has a control system which is capable of scheduling a preselected combination of operations, such as regulation of water temperature, regulation of the water fill level, and performance of wash, rinse, drain, and spin functions without the need for user intervention subsequent to the initiation of machine operation. Some models may require user intervention to initiate these different segments of the cycle after the machine has begun operation, but they do not require the user to intervene to regulate the water temperature by adjusting the external water faucet valves.

"Clothes washer" means a consumer product designed to clean clothes, utilizing a water solution of soap or detergent and mechanical agitation or other movement~~, and must be one of the following classes: automatic clothes washers, semi-automatic clothes washers, and other clothes washers~~.

~~"Other clothes washer" means a class of clothes washer which is not an automatic or semi-automatic clothes washer.~~

"Semi-automatic clothes washer" means a class of clothes washer that is the same as an automatic clothes washer except that user intervention is required to regulate the water temperature by adjusting the external water faucet valves.

(n) Clothes Dryers.

"Electric clothes dryer" means a cabinet-like appliance designed to dry fabrics in a tumble-type drum with forced air circulation. The heat source is electricity and the drum and blowers(s) are driven by an electric motor(s).

"Gas clothes dryer" means a cabinet-like appliance designed to dry fabrics in a tumble-type drum with forced air circulation. The heat source is gas and the drum and blower(s) are driven by an electric motor(s).

(o) Kitchen Ranges and Ovens.

"Kitchen ranges and ovens" means consumer products that are used as the major household cooking appliances, that are designed to cook or heat different types of food by gas, electricity, or microwave energy, that consist of a horizontal cooking top containing one or more surface units or one or more heating compartments~~, and that are conventional ranges, conventional cooking tops, conventional ovens, microwave ovens, microwave/conventional ranges or another kitchen range or oven~~.

(p) Television Sets.

"Color television set" means an electrical device designed to convert incoming broadcast signals into color television pictures and associated sound.

"Monochrome television set" means an electrical device designed to convert incoming broadcast signals into monochrome television pictures and associated sound.

"Television set" means a color television set or a monochrome television set.

(q) Electric Motors.

"Definite purpose motor" means any motor designed in standard ratings with standard operating characteristics or standard mechanical construction for use under service conditions other than usual or for use on a particular type of application and which cannot be used in most general purpose applications.

"Efficiency" of an electric motor means the ratio of an electric motor's useful power output to its total power input, expressed in percentage.

"~~Electric~~ General purpose motor" means any motor which is a general purpose T-frame, single-speed, foot-mounting, polyphase squirrel-cage induction motor of the National Electrical Manufacturers

Association, Design A and B, continuous rated, operating on 230/460 volts and constant 60 Hertz line power as defined in NEMA Standards Publication MG1-1987.

"~~Enc~~Closed motor" means a motor so enclosed as to prevent the free exchange of air between the inside and outside of the case but not sufficiently enclosed to be termed airtight.
"Nominal full load efficiency" means the average efficiency of a population of motors of duplicate design as determined in accordance with NEMA Standards Publication MG1-1987.

"Open motor" means a motor having ventilating openings which permit passage of external cooling air over and around the windings of the machine.

"Special purpose motor" means any motor, other than a general purpose motor or definite purpose motor, which has special operating characteristics or special mechanical construction, or both, designed for a particular application.

(r) Lighting Control Devices

"Automatic daylighting control device" means

"Automatic time switch control device" means a device capable of automatically turning loads off and on based on time schedules.

"Interior photocell sensor device" means

"Lighting control device" means

"Lumen maintenance control device" means a device capable of automatically adjusting the light output of a lighting system throughout a continuous range to provide a preset level of illumination.

"Occupant sensing device" means a device that automatically turns lights off soon after an area is vacated.

(s) Demand Control Devices

"Carbon dioxide demand ventilation control device" means

"Demand ventilation control device" means

"Volatile organic compound demand ventilation control device" means

The following standards are incorporated by reference in Section 1602.

Number	*Title*
AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)	
ANSI C78.1-1978 (R1984)	Dimensional and Electrical Characteristics of Fluorescent Lamps, Rapid Start Types
ANSI C78.3-1978 (R1984)	Dimensional and Electrical Characteristics ~~and~~ of Fluorescent Lamps, Instant Start and Cold Cathode Types
NEMA MG1-1987	NEMA Standards Publication
Copies available from:	National Electric Manufacturers Association 2101 L Street, N.W. Washington, D.C. 20037

Section 1603. Test Methods.

The manufacturer shall cause the testing of samples of each basic model of appliance listed in this section, using the applicable test method listed in this section, at a laboratory that has been approved by the Executive Director for the use of that test method. Such a laboratory is one that:

(1) has conducted tests using the applicable test method;
(2) agrees to and does interpret the test method precisely as written;
(3) agrees to and does maintain copies of all test reports, and provides any such report to the Executive Director on request, for all models that are still in commercial production; and
(4) agrees to and does allow a representative of the Commission to witness any test on request.

(a) Refrigerators, Refrigerator-Freezers, and Freezers. The test methods for refrigerators, refrigerator-freezers, and freezers are shown in Table A-1.

When a refrigerator, refrigerator-freezer or freezer can be operated using either alternating current electricity or one or more other sources of primary power, the test shall be performed using alternating current electricity only.

Table A-1

Appliance Type	*Test Procedure*
Federally-regulated consumer products	10 CFR Section 430.23(a) and (b)
Wine chillers that are consumer products	10 CFR Section 430.23(a)
Freezers > 30 ft^3 that are consumer products	10 CFR Section 430.23(b)
Refrigerated bottled or canned beverage vending machines	ANSI/ASHRAE 32.1-1997
Other commercial refrigerators, refrigerator-freezers, and freezers	ANSI/ASHRAE 117-1992[1]

[1] Provided that the controls shall be adjusted to obtain the following product temperatures:

Type	*Initial Product Temperature – ^{O}F*	*Maximum Product Temperature - ^{O}F*
Refrigerator – fresh food	38 plus or minus 1	40
Freezer	0 plus or minus 1	0
Reach-in wine cooler	45 plus or minus 1	No requirement
Ice cream cabinet	-5 plus or minus 1	0

(b) Room Air Conditioners, Room Air Conditioning Heat Pumps, Packaged Terminal Air Conditioners, and Packaged Terminal Heat Pumps. The test methods for room air conditioners, room air conditioning heat pumps, packaged terminal air conditioners, and packaged terminal heat pumps are shown in Table B-1.

Table B-1

Appliance Type	*Test Procedure*
Room air conditioners, including room air-conditioning heat pumps, but excluding package terminal air conditioners and heat pumps	Room air-conditioner test method in 10 CFR Section 430.23(f) (1999)
Packaged terminal air conditioners and heat pumps	ARI 310/380-93

(c) Central Air Conditioners. (1) The test methods for central air conditioners are shown in Table C-1. Air-cooled central air conditioners with rated cooling capacity less than 65,000 Btu per hour which are designed for use either at 230 volts or at other voltage(s) may be tested at 230 volts and the results applied to the other voltages. All types of central air conditioners which are designed for use either at 208 volts or at other voltage(s) may be tested at 208 volts and the results applied to the other voltages.

Table C-1

Appliance Type	*Test Procedure*
Unitary air-conditioners, and heat pumps, including computer room air-conditioners	
air cooled or air source	ARI 210 / 240 – 94 ARI 340 / 360 – 93
< 135,000 Btu / hour = > 135,000 Btu / hour	
water or evaporatively cooled or water source	ANSI/ARI 320-93
<135,000 Btu/hour	STD – 201 (96) ARI 340 / 360 – 93
=> 135,000 Btu/hour	ANSI/ARI 325 – 93
ground water source	ARI 330-93
ground source	
Condensing Units > 135,000 Btu / hour	
air cooled	ARI 365-94
water or evaporatively cooled	ARI 365 – 94 STD – 201 (96)
Water chilling packages	
air cooled	ARI 550 – 92 ARI 590 – 92
water cooled	STD – 201 (96) ARI 550 – 92 ARI 590 –92

(2) Split system central air conditioners and compressor-containing units shall be tested with the non-compressor-containing unit most likely to represent the highest national sales volume for the combined equipment.

(d) Spot Air Conditioners. The test method for spot air conditioners is the standard, ANSI/ASHRAE 128-1989.

(e) Gas and Oil Space Heaters.

(1) Dual-Fuel Models. Models of gas space heaters intended for use either with natural gas or liquefied petroleum gases may be tested with natural gas and the results applied to both fuel types.

(2) The test method for gas and oil central warm air furnaces, combination space heating/water heating appliances gas infrared heaters, gas and oil unit heaters and duct furnaces, gas and oil boilers, and gas and oil wall furnaces, floor furnaces, and room heaters are shown in Table E-1.

Table E-1

Appliance Type	*Test Procedure*
Central warm air furnaces < 225,000 Btu/hour => 225,000 Btu/hour gas-fired oil-fired	10 CFR Section 430.23(n)(1999) ANSI Z21.47 – 1987 ANSI/UL 727-86
Infrared heaters	ANSI Z 83.6 – 1990
Unit heaters gas-fired oil-fired Duct furnaces (gas-fired only)	 ANSI Z83.8 – 1990 UL 731-95 ANSI Z 83.9 – 1986
Boilers < 300,000 Btu/hour => 300,000 Btu/hour gas-fired oil-fired	 10 CFR Section 430.23(n)(1999) ANSI Z 21.13 – 1991[a] Hydronics Institute Standard for Heating Boilers
Wall furnaces, floor furnaces and room heaters	10 CFR Section 430.23(o)(1999)
Combination space-heating/ water-heating appliances	ANSI/ASHRAE 124-1991

[a] Determination of input rate and flue losses shall be in accordance with the provisions of this standard. Combustion efficiency shall be determined by subtracting flue losses from the input rate (without applying any tolerances).

Water Heaters.

(1) Dual-Fuel Models. Models of water heaters intended for use either with natural gas or liquefied petroleum gases may be tested with natural gas and the results applied to both fuel types.

(2) The test methods for small water heaters are those shown in Table F-1.

Table F-1

Appliance Type	*Test Procedure*
Federally-regulated small water heaters	10 CFR Section 430.23(e)(1999)
Non-federally-regulated small water heaters storage-type < 20 gallons others	 ANSI/ASHRAE 118.2-1993 10 CFR Section 430.23(e)(1999)

(3) Large water heaters. The test method for large water heaters is the standard, ANSI Z21.10.3-1993, modified as follows:

When testing an electric storage-type water heater for standby loss using the test procedure of Section 2.9 of ANSI Standard Z21.10.3-1993:

(i) the electrical supply voltage shall be maintained within ± 1% of the center of the voltage range specified on the water heater nameplate;

(ii) when needed for calculations, the thermal efficiency (E_t) shall be 98%.

When testing an oil water heater using the test procedures of Section 2.8 and 2.9 of ANSI Standard Z21.10.3-1993:

(i) a vertical length of flue pipe shall be connected to the flue gas outlet of sufficient height to establish the minimum draft specified in the manufacturer's installation instructions;

(ii) all measurements of oil consumption shall be taken by instruments with an accuracy of ± 1% or better; and

(iii) the burner rate shall be adjusted to achieve an hourly Btu input rate within ± 2% of the manufacturer's specified input rate with the CO_2 reading as specified by the manufacturer

with smoke no greater than 1 and the fuel pump pressure within ± 1% of the manufacturer's specification.

(g) Pool Heaters. The test method for pool heaters is ANSI/ASHRAE 146-1998.

(h) Plumbing Fittings.

(1) All Plumbing Fittings. The test method for showerheads, lavatory faucets, kitchen faucets, metering faucets, replacement aerators, wash fountains, and tub spout diverters is ANSI/ASME A112.18.1M-1996, with the additional conditions described in subsection ~~(b)~~(2) for showerheads.

(2) Showerheads. Showerheads with a flow restricting mechanism that is mechanically retained at the point of manufacture shall be tested with the flow restricting mechanism in place. Showerheads with a radially drilled hole which is sealed when a flow restricting mechanism is in position, but which sprays water out of the side of the showerhead when the flow restricting mechanism is removed, shall also be tested with the flow restricting mechanism in place. Other showerheads with a flow restricting mechanism that is not mechanically retained at the point of manufacture shall be tested with the flow restricting mechanism removed. Mechanically retained shall mean that a pushing or pulling force of at least eight pounds is required to remove the mechanism.

(i) Plumbing Fixtures. The test method for toilets and urinals is ANSI/ASME A112.19.2M-1990.

(j) Fluorescent Lamp Ballasts. The test method for fluorescent lamp ballasts is the test procedure in 10 CFR Section 430.23(q) 1999.

(k) Lamps. The test method for general service fluorescent lamps and incandescent reflector lamps is the test procedure for lamps in 10 CFR section 43~~0~~9.22(r)(1999).

(l) Dishwashers. The test method for dishwashers is the test procedure for dishwashers in 10 CFR Section 430.23(c) (1999).

(m) Clothes Washers. The test method for clothes washers is the test procedure for clothes washers in 10 Code of Regulations section 430.22(j) (1999).

(n) Clothes Dryers. The test method for clothes dryers is test procedure for clothes dryers in 10 CFR Section 430.23(d) (1999).

(o) Kitchen Ranges and Ovens. The test method for kitchen ranges and ovens is the test procedure for kitchen ranges and ovens in 10 CFR Section 430.23(i) (1999).

(p) Television Sets. The test method for television sets is the test procedure for television sets in 10 CFR Section 430.23(h) (1999).

(q) Electric Motors. The test method for electric motors is the test procedure in NEMA Standards Publication MG1-1987 and IEEE Standard 112 Test Method B.

1603 – Test Methods

The following documents are incorporated by reference in Section 1603.

FEDERAL TEST METHODS

CFR, Title 10, Section 430.22 (1999)

Copies available from: Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

AIR-CONDITIONING AND REFRIGERATION INSTITUTE (ARI)

ARI 210/240-94 Standard for Unitary Air-Conditioning and Air-Source Heat Pump Equipment

ARI 310/380-93 Standard for Packaged Terminal Air-Conditioners and Heat Pumps

ANSI/ARI 320-~~86~~93 Standard for Water-Source Heat Pumps

ARI 330-93 Standard for Ground Source Closed Loop Heat Pumps

ARI 325-~~85~~93 Standard for Ground Water-Source Heat Pumps

ANSI/ARI 340-~~86~~/360-93 Standard for Commercial and Industrial Unitary Heat Pump Equipment

ARI 365-95

ARI 550-92

ARI 590-92

Copies available from: Air-Conditioning and Refrigeration Institute
4301 North Fairfax Drive, Suite 425
Arlington, VA 22203

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ANSI/ASME A112.18.1M-1996 Plumbing Fixture Fittings

ANSI/ASME A112.19.2M-1990 Vitreous China Plumbing Fixtures

Copies available from: American Society of Mechanical Engineers
345 East 47th Street

New York, NY 10017

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI C82.2-1984	Methods of Measurement for Fluorescent Lamp Ballasts
Copies available from:	National Electrical Manufacturers Association 2101 L Street, N.W. Washington, D.C. 20037
ANSI Z21.10.3-1993	Standard for Gas Water Heaters, Volume III, Storage with Input Ratings Above 75,000 Btu per hour, Circulating and Instantaneous Water Heaters
ANSI Z21.13-~~1987~~1991	Standard for Gas-Fired Low Pressure Steam and Hot Water Boilers
ANSI Z21.47-1987	
ANSI Z83.6-1990	Standard for Gas-Fired Infrared Heaters
ANSI Z83.8-1990	Standard for Gas Unit Heaters
ANSI Z83.9-1990	Standard for Gas Duct Furnaces
ANSI/UL 727-86	
Copies available from:	American Gas Association 400 North Capitol Street Washington, DC 20001

AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR-CONDITIONING ENGINEERS (ASHRAE)

ANSI/ASHRAE 32.1-1997	Methods of Testing for Rating Bottled and Canned Beverage Vending Machines
ANSI/ASHRAE 117-1992	Methods of Testing Closed Refrigerators
ASHRAE 118.2-1993	Method of Testing for Rating Residential Gas, Electric, and Oil Water Heaters
ANSI/ASHRAE 124-1991	

ANSI/ASHRAE 128-1989 Method of Rating Spot Air Conditioners

ANSI/ASHRAE 146-1998 Method of Testing and Rating Pool Heaters

Copies available from: American Society of Heating, Refrigerating and Air-Conditioning Engineers
1791 Tullie Circle NE
Atlanta, GA 30329

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION

NEMA MG1-1987 NEMA Standards Publication

Copies available from: National Electrical Manufacturers Association
2101 L Street, N.W.
Washington, DC 20037

INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS

ANSI/IEEE 112~~-1992~~ ~~Test Procedures for Polyphase Induction Machines~~ Test Method B

Copies available from: Institute of Electrical and Electronic Engineers
445 Hoes Lane
PO Box 1331
Piscataway, NJ 08855-1331

UL 731-95

Hydronics Institute (oil fired boilers =>300,000)

Section 1604. Energy Efficiency and Design Standards; In General.

Section 1604.1 contains standards that are the same as the federal standards contained in or adopted under NAECA or EPAct. They are applicable as federal law to the sale of appliances in California. In addition, they are adopted here as state law and as such are applicable to appliance installation in Title 24 construction.

Section 1604.2 contains standards that are exclusively California standards. They are applicable as state law to both the sale of appliances in California and to appliance installation in Title 24 construction.

Section 1604.3 contains standards that are exclusively California standards. They are applicable as state law only to appliance installation in Title 24 construction.

If more than one standard is shown for an appliance, the appliance shall meet all the standards shown.

If more than one test method is shown as applicable to a standard, the appliance shall comply with the standard when tested with each test method.

If an appliance can serve more than one function, such as both heating and cooling, or both space heating and water heating, it shall comply with all the requirements applicable to each function.

Section 1604.1. Federally-regulated appliances; standards applicable to both sale (federal enforcement) and to Title 24 construction (California enforcement).

These standards are federal law. They are contained in, or adopted in regulations pursuant to, NAECA and EPAct. They are applicable to the distribution of appliances in commerce anywhere in the U.S. and they are enforced by the U.S. Department of Energy. It is illegal under federal law for any appliance within the scope of this section to be sold in the United States unless the appliance complies with the federal standards.

These standards are also adopted here as state law insofar as the appliances they cover are installed in Title 24 construction. As such, they are enforced by the California Energy Commission and local building departments.

No appliance within the scope of this section shall be installed in Title 24 construction unless, pursuant to section 1605, (1) the manufacturer has certified that the appliance complies with the applicable standard shown in this section and (2) the appliance is listed in the database.

In addition, no appliance within the scope of this section shall be sold in California, or installed in Title 24 construction, unless the manufacturer has (1) tested it as required by section 1603, and (2) marked it as required by section 1606.

1604.1 Standards for Federally-Regulated Appliances

(a) Refrigerators, Refrigerator-freezers and Freezers.

(1) Standards. Except as provided in paragraph (2) of this subsection, the energy consumption of all refrigerators, refrigerator-freezers and freezers shall not greater than the values shown in Table A-2.

Table A-2

Product class	***Energy standards equations for maximum energy use (kWh/yr)***	
	Effective January 1, 1993	***Effective July 1, 2001***
Refrigerators and Refrigerator-freezers with manual defrost	13.5AV+299	8.82AV+248.4
Refrigerator-Freezer—partial automatic defrost	10.4AV+398	8.82AV+248.4
Refrigerator-Freezers—automatic defrost with top-mounted freezer without through-the-door ice service and all-refrigerators--automatic defrost	16.0AV+355	9.80AV+276.0
Refrigerator-Freezers—automatic defrost with side-mounted freezer without through-the-door ice service	11.8AV+501	4.91AV+507.5
Refrigerator-Freezers—automatic defrost with bottom-mounted freezer without through-the-door ice service	16.5AV+367	4.60AV+459.0
Refrigerator-Freezers—automatic defrost with top-mounted freezer with through-the-door ice service	17.6AV+391	10.20AV+356.0
Refrigerator-Freezers—automatic defrost with side-mounted freezer with through-the door ice service.... Upright freezers with Manual Defrost	16.3AV+527	10.10AV+406.0
Upright freezers with Automatic Defrost	10.3AV+264	7.55AV+258.3
Chest Freezers and all other Freezers except Compact Freezers	14.9AV+391	12.43AV+326.1
Compact Refrigerators and Refrigerator-Freezers with Manual Defrost	11.0AV+160	9.88AV+143.7
Compact Refrigerator-Freezers—partial automatic defrost	13.5AV+299[a]	10.70AV+299.0
Compact Refrigerator-Freezers—automatic defrost with top-mounted freezer and compact all-refrigerators—automatic defrost	10.4AV+398[a]	7.00AV+398.0
Compact Refrigerator-Freezers—automatic defrost with side-mounted freezer	16.0AV+355[a]	12.70AV+355.0
Compact Refrigerator-Freezers—automatic defrost with bottom-mounted freezer	11.8AV+501[a]	7.60AV+501.0
Compact Upright Freezers with Manual Defrost	16.5AV+367[a]	13.10AV+367.0
Compact Upright Freezers with Automatic Defrost	10.3AV+264[a]	9.78AV+250.8
Compact Chest Freezers	14.9AV+391[a]	11.40AV+391.0
	11.0AV+160[a]	10.45AV+152.0

AV=Total adjusted volume, expressed in ft^3, as determined in 10 CFR, Part 430, Appendices A1 and B1 of subpart B.

[a]Applicable standards for compact refrigerator products manufactured before July 1, 2001. Compact refrigerator products are not separate product categories under the standards effective January 1, 1993.

"Compact refrigerator/refrigerator-freezer/freezer" means any refrigerator, refrigerator-freezer or freezer with total volume less than 7.75 ft^3 (rated volume as determined in 10 CFR, Part 430, Appendix A1 and B1 of Subpart B) and 36 inches or less in height.

(2) Exceptions for freezers with volume greater than 30 ft^3, commercial refrigerators, refrigerator-freezers, and freezers, and wine chillers. There is no energy efficiency or energy design standard ~~in this section~~ for freezers with volume exceeding 30 ft^3, commercial refrigerators, refrigerator-freezers, and freezers, or wine chillers.

(3) See Section 1604.2 for standards for wine chillers.

(b) Room Air Conditioners, room air conditioning heat pumps, packaged terminal air conditioners, and packaged terminal heat pumps.

(1) Room air conditioners and room air conditioning heat pumps. The EER of all room air conditioners and room air conditioning heat pumps shall be not less than the values shown in Table B-2. The EER of room air conditioners that are labeled for use at more than one voltage shall be not less than the values shown in Table B-2 at each of the labeled voltages.

Table B-2

Product class	*EER effective as of*	
	January 1, 1990	*October 1, 2000*
Without reverse cycle, with louvered sides, and less than 6,000 Btu/h	8.0	9.7
Without reverse cycle, with louvered sides, and 6,000 to 7,999 Btu/h	8.5	9.7
Without reverse cycle, with louvered sides, and 8,000 to 13,999 Btu/h	9.0	9.8
Without reverse cycle, with louvered sides and 14,000 to 19,999 Btu/h	8.8	9.7
Without reverse cycle, with louvered sides, and 20,000 Btu/h or more	8.2	8.5
Without reverse cycle, without louvered sides, and less than 6,000 Btu/h	8.0	9.0
Without reverse cycle, without louvered sides, and 6,000 to 7,999 Btu/h	8.5	9.0
Without reverse cycle, without louvered sides, and 8,000 to 13,999 Btu/h	8.5	8.5
Without reverse cycle, without louvered sides, and 14,000 to 19,999 Btu/h	8.5	8.5
Without reverse cycle, without louvered sides, and 20,000 Btu/h or more	8.2	8.5
With reverse cycle, with louvered sides, and less than 20,000 Btu/h	8.5	9.0
With reverse cycle, without louvered sides, and less than 14,000 Btu/h	8.0	8.5
With reverse cycle, with louvered sides, and 20,000 Btu/h or more	8.5	8.5
With reverse cycle, without louvered sides, and 14,000 Btu/h or more	8.0	8.0
Casement-Only	*	8.7
Casement-Slider	*	9.5

*Casement-only and casement-slider room air conditioners are not separate product classes under standards effective January 1, 1990. These units are subject to the applicable standards in the other 14 classes based on unit capacity and the presence or absence of louvered sides and a reverse cycle.

(2) Packaged Terminal Air Conditioners and Packaged Terminal Heat Pumps. The EER and COP, as applicable, of packaged terminal air conditioners and packaged terminal heat pumps shall be not less than the values shown in Table B-3.

Table B-3

Category	*Rating Condition (Outdoor Temp.°F)*	*Efficiency*
Packaged terminal air conditioners and packaged terminal heat pumps[a] (cooling mode)	Standard Rating (95db)	10.0-(.16 x Cap. /1000) EER
Packaged terminal heat pumps (heating mode)	Standard Rating (47db/43wb)	2.9-(0.026 x Cap. /1000) COP

a. If the unit's capacity is less than 7,000 Btu/h, use 7,000 Btu/h in the calculation. If the unit's capacity is greater than 15,000 Btu/h, use 15,000 Btu/h in the calculation.

db = dry bulb temperature
wb = wet bulb temperature
EER = energy efficiency ratio
COP = coefficient of performance
Cap. = rated cooling capacity (Btu/hour)

1604.1 Standards for Federally-Regulated Appliances

(c) Central Air Conditioners.

(1) The energy efficiency ratio, seasonal energy efficiency ratio, coefficient of performance, and heating seasonal performance factor, as applicable, of all central air conditioners shall be not less than the values shown in Tables C-2, C-3, C-4, and C-5.

Table C-2

Category	*Cooling Capacity*	*Sub-Category & Rating Condition (Outdoor Temp. ^{o}F)*	*Efficiency*
Air-cooled unitary air conditioners and heat pumps (cooling mode) including Computer Room Air Conditioners	<65,000 BTU/HR	Seasonal Rating (split system) Seasonal Rating (single package)	10.0 SEER 9.7 SEER
	≥65,000 <135,000 BTU/HR	Standard Rating (95db)	8.9 SEER
	=>135,000 BTU/HR <240,000 BTU/HR	Standard Rating (95db)	8.5 SEER
Air-cooled unitary air-conditioning heat pumps (heating mode)	<65,000 BTU/HR	Seasonal Rating (split system) Seasonal Rating (single package)	6.8 HSPF 6.6 HSPF
	≥65,000 <135,000 BTU/HR	High Temp. Rating (47db/43wb)	3.0 COP
	=>135,000 BTU/HR <240,000 BTU/HR	High Temp. Rating (47db/43wb)	2.9 COP

db = dry bulb
wb = wet bulb temperature
SEER = Seasonal energy efficiency ratio
EER = Energy efficiency ratio
HSPF = Heating seasonal performance factor
COP = Coefficient of performance

Table C-3

Category	*Cooling capacity*	*Rating Condition (Outdoor Temp ^{o}F).*	*Efficiency*
Evaporatively Cooled Unitary air conditioners including Computer Room Air Conditioners	<65,000 BTU/HR	Standard Rating 95db/75wb	9.3 EER
	>65,000 <135,000 BTU/HR	Standard Rating 95db/75wb	10.5 EER
	=>135,000 <240,000 BTU/HR	Standard Rating 95db/75wb	9.6 EER

db = dry bulb temperature
wb = wet bulb temperature
EER = Energy efficiency ratio

Table C-4

		Rating Condition °F		*EER*
Category	*Cooling Capacity*	*Indoor Temp.*	*Entering Water*	
Water-Cooled Unitary Air Conditioners inculding Computer Room Air Conditioners	<65,000 BTU/HR	Standard Rating	85	9.3 EER
	>65,000 <135,000 BTU/HR	Standard Rating	85	10.5 EER
	=>135,000 240,000 BTU/HR	Standard Rating	85	9.6 EER
EER = Energy efficiency ratio				

See Section 1604.2 (c) for cooling energy efficiency standards for water source heat pumps < 135,000 Btu/hr and all energy efficiency standards for groundwater-source heat pumps.

Table C-5

	Rating Condition °F	*COP*
Water-Source Heat Pumps	Standard Rating 70 Entering Water[b]	3.8
COP = COP a = Air entering indoor section 70db/60wb (max). b = Water Flow Rate Per Mfg. Spec		

(d) Spot Air Conditioners There is no energy efficiency standard or energy design standard for spot air conditioners.

(e) Gas and Oil Space Heaters.

(1) The AFUE of all new gas wall furnaces, floor furnaces, and room heaters shall be not less than the values shown in Table E-2.

Table E-2

Appliance	*AFUE*
Wall Furnaces	
fan type	
up to 42,000 Btu/hour	73%
over 42,000 Btu/hour	74%
gravity type	
up to 10,000 Btu/hour	59%
over 10,000 Btu/hour up to 12,000 Btu/hour	60%
over 12,000 Btu/hour up to 15,000 Btu/hour	61%
over 15,000 Btu/hour up to 19,000 Btu/hour	62%
over 19,000 Btu/hour up to 27,000 Btu/hour	63%
over 27,000 Btu/hour up to 46,000 Btu/hour	64%
over 46,000 Btu/hour	65%
Floor Furnaces	
Up to 37,000 Btu/hour	56%
Over 37,000 Btu/hour	57%
Room Heaters	
Up to 18,000 Btu/hour	57%
Over 18,000 Btu/hour up to 20,000 Btu/hour	58%
Over 20,000 Btu/hour up to 27,000 Btu/hour	63%
Over 27,000 Btu/hour up to 46,000 Btu/hour	64%
Over 46,000 Btu/hour	65%

(2) The AFUE, thermal efficiency, and combustion efficiency, as applicable, of all central gas and oil furnaces and boilers shall be not less than the values shown in Tables E-3~~,~~ and E-4, ~~shall be not greater than the values shown in Table E-3~~.

Table E-3

Category	*Rating Condition*	*Efficiency*
Gas and oil boilers Single phase <300,000 BTU/HR	Seasonal Rating (AFUE) Gas steam boilers All others	 75% ~~80%~~
Gas Packaged Boilers >300,000 BTU/HR	Max. Rated Capacity Combustion Efficiency	80%
Oil Packaged Boilers >300,000 BTU/HR	Max. Rated Capacity Combustion Efficiency	83%

(3) See Section 1604.2(e) for standards for boilers that are not federally-regulated commercial and industrial equipment or a federally-regulated consumer product.

Table E-4

Category	*Rated Input*	*Rating Condition*	*Efficiency*
Gas and Oil Single Phase Central Furnaces	<225,000 BTU/HR	Seasonal Rating (AFUE)	78%
Gas Central Furnaces	=>225,000 BTU/HR	Max. Rated Cap. Steady State (Thermal Efficiency)	80%
Oil Central Furnaces	=>225,000 BTU/HR	Max. Rated Cap. Steady State (Thermal Efficiency)	81%

(4) See Section 1604.2(e) for standards for duct furnaces and unit heaters.

(5) There is no energy efficiency standard or energy design standard for infrared gas heaters.

(f) Water Heaters

(1) Large water heaters. The thermal efficiency of all large water heaters shall be not less than the values shown in Table F-~~1~~(2) the standby loss of all large water heaters shall be not greater than the values shown in Table F-~~1~~(2).

Table F-~~1~~(2)

Type	*Fuel*	*Input Rating Btu/hr*	*Volume (gallons)*	*Input to Volume Ratio(Btu/gal)*	*Thermal Efficiency %*	*Standby Loss* [1,2] *%/hr*
all	gas	≤ 155,000	All	< 4,000	78%	1.3 + 114/V
		> 155,000	all	< 4,000	78%	1/3 + 95/V
			< 10	≥ 4,000	80%	no requirement
			≥ 10	≥ 4,000	77%	2.3 + 67/V
storage	electric oil		all	all	no requirement	0.30 + 27/V
all		≤155,000	all	< 4,000	78%	1.3 + 114/V
		>155,000	all	< 4,000	78%	1.3 + 95/V
			< 10	≥ 4,000	80%	no requirement
			≥ 10	≥ 4,000	77%	2.3 + 67/V

1. Where V = volume in gallons
2. Storage-type water heaters with volume exceeding 140 gallons need not meet the standby loss requirement if they are thermally insulated to at least R-12.5 and if a standing pilot light is not used.

(2) Small water heaters within the scope of the federal test method. The energy factor of all small water heaters within the scope of the test procedure in 10 CFR Section 430.23(e) (1999) shall be not less than the values shown in Table F-~~2~~(3)

Table F-~~2~~(3)

Water Heater Type	*Energy Factor*
Gas	0.62 - (.0019 x V)
Electric (including heat pump)	0.93 - (.00132 x V)
Oil	0.59 - (.0019 x V)
Where V = Rated volume in gallons	

See Section 1604.~~3~~2(f) for standards for other small water heaters.

(g) Pool Heaters

(1) The thermal efficiency of all gas-fired and oil-fired pool heaters shall be not less than 78%.

(2) There is no energy efficiency standard for heat pump pool heaters.

See Section 1604.~~3~~2(g) for design standards for pool heaters.

(h) Plumbing Fittings.

(1) Maximum flow rate for all plumbing fittings. The flow rate of all showerheads, lavatory faucets, kitchen faucets, wash fountains and metering faucets shall be not greater than the values shown in Table H-1.

~~(2) Flow restricting mechanisms in showerheads. When a flow restricting mechanism is incorporated as a component of a showerhead, it shall be mechanically retained at the point of manufacture. Mechanically retained shall mean that a pushing or pulling force of at least eight pounds is required to remove the mechanism.~~

Table H-1

Plumbing Fittings	*Maximum Flow Rate*
Showerheads	2.5 gpm at 80 psi
Lavatory faucets	2.2 gpm at 60 psi
Kitchen faucets	2.2 gpm at 60 psi
Wash fountains	$\frac{\text{rim space (in)}}{20\text{ in}} \times 2.2$ gpm at 60 psi
Metering faucets	0.25 gals/cycle

~~(3)~~(2) See Section 1604.2(h) for standards for tub spout diverters.

1604.1 Standards for Federally-Regulated Appliances

(i) Plumbing Fixtures.

The flow rate of all new toilets and urinals shall be not greater than the values shown in Table I.

Table I

Plumbing Fixtures	*Maximum Gallons per Flush*
Gravity tank-type toilets	1.6
Flushometer tank toilets	1.6
Electromechanical hydraulic toilets	1.6
Blowout toilets	3.5
Trough-type urinals	$0.1 \times \frac{\text{trough length (in)}}{\text{1 in}}$
Other urinals	1.0

(j) Fluorescent Lamp Ballasts

The ballast efficacy factor of all fluorescent lamp ballasts shall be not less than the values shown in Table J.

Table J

Application for Operation of	*Ballast Input Voltage*	*Total Nominal Lamp Watts*	*Ballast Efficacy Factor*
one F40T12 lamp	120 or 277	40	1.805
two F40T12 lamps	120 277	80 80	1.060 1.050
two F96T12 lamps	120 or 277	150	0.570
two F96T12HO lamps	120 or 277	220	0.390

(k) Lamps

The average lamp efficacy and color rendition index of general service fluorescent lamps and incandescent reflector lamps shall be not less than the values shown in Tables K-1 and K-2, as applicable.

Table K-1
General Service Fluorescent Lamps

Lamp Type	Nominal Lamp Wattage	Minimum Color Rendition Index	Minimum Average Lamp Efficacy (LPW)
4-foot medium bi-pin	>35 W <35 W	69 45	75.0 75.0
2-foot U-shaped	>35 W <35 W	69 45	68.0 64.0
8-foot slimline	>65 W <65 W	69 45	80.0 80.0
8-foot high output	>100 W <100 W	69 45	80.0 80.0

Table K-2
Incandescent Reflector Lamps

Nominal Lamp Wattage	Minimum Average Lamp Efficacy (LPW)
40-50	10.5
51-66	11.0
67-85	12.5
86-115	14.0
116-155	14.5
156-205	15.0

(l) Dishwashers

The energy factor of all dishwashers that are consumer products shall be not less than the values shown in Table L.

Table L

Product Class	*Energy Factor (Pounds per kWh)*
Compact dishwasher~~s~~ (less than 22 inches in exterior width)	0.62
Standard dishwasher (equal to or greater than 22 inches in ~~E~~exterior width)	0.46

(m) Clothes Washers

(1) Energy efficiency standard for top-loading automatic clothes washers. The energy factor of all top-loading compact and standard clothes washers that are consumer products shall be not less than the values shown in Table M.

Table M

Product Class	*Energy Factor (Cu. ft /kWh/cycle)*
Top loading, compact (< 1.6 ft^3 ~~C~~capacity)	0.90
Top loading, standard (=>1.6 ft^3 ~~C~~capacity)	1.18

(2) Energy design standard for top loading semi-automatic and front-loading clothes washers. Top-loading semi-automatic and front-loading clothes washers shall have an unheated rinse water option.

(n) Clothes Dryers

(1) Energy efficiency standard for electric clothes dryers. The energy factor of all electric clothes dryers that are consumer products shall be not less than the values shown in Table N.

Table N

Product Class	*Energy Factor (lbs/kWh)*
Electric, standard (=> 4.4 ft^3 ~~C~~capacity)	3.01
Electric, compact (120 volts) (< 4.4 ft^3 capacity)	3.13
Electric, compact (240 volts) (< 4.4 ft^3 capacity)	2.90

(2) Energy efficiency and energy design standards for gas clothes dryers.

(A) The energy factor of all gas clothes dryers shall be not less than 2.67 pounds per kWh.

(B) Gas clothes dryers shall not be equipped with a constant burning pilot.

(o) Kitchen Ranges and Ovens

(1) Energy design standard for gas kitchen ranges and ovens with an electrical supply cord. Gas kitchen ranges and ovens with an electrical supply cord shall not be equipped with a constant burning pilot.

(2) All other kitchen ranges and ovens. There is no energy efficiency standard or energy design standard for other kitchen ranges and ovens.

(p) Television Sets

There is no energy efficiency standard or energy design standard for television sets.

1604.1 Standards for Federally-Regulated Appliances

(q) Electric Motors

The nominal full load efficiency of all electric motors that are federally-regulated commercial and industrial equipment shall be not less than the values shown in Table Q.

Table Q

Motor Horsepower	*Nominal Full-Load Efficiency*					
	Open Motors			*Closed Motors*		
	6 poles	*4 poles*	*2 poles*	*6 poles*	*4 poles*	*2 poles*
1	80.0	82.5	. . .	80.0	82.5	75.5
1.5	84.0	84.0	82.5	85.5	84.0	82.5
2	85.5	84.0	84.0	86.5	84.0	84.0
3	86.5	86.5	84.0	87.5	87.5	85.5
5	87.5	87.5	85.5	87.5	87.5	87.5
7.5	88.5	88.5	87.5	89.5	89.5	88.5
10	90.2	89.5	88.5	89.5	89.5	89.5
15	90.2	91.0	89.5	90.2	91.0	90.2
20	91.0	91.0	90.2	90.2	91.0	90.2
25	91.7	91.7	91.0	91.7	92.4	91.0
30	92.4	92.4	91.0	91.7	92.4	91.0
40	93.0	93.0	91.7	93.0	93.0	91.7
50	93.0	93.0	92.4	93.0	93.0	92.4
60	93.6	93.6	93.0	93.6	93.6	93.0
75	93.6	94.1	93.0	93.6	94.1	93.0
100	94.1	94.1	93.0	94.1	94.5	93.6
125	94.1	94.5	93.6	94.1	94.5	94.5
150	94.5	95.0	93.6	95.0	95.0	94.5
200	94.5	95.0	94.5	95.0	95.0	95.0

(r) Lighting Control Devices

See Section 1604.3(r) for design standards for lighting control devices.

(s) Demand Ventilation Control Devices

See Section 1604.3(s) for design standards for demand ventilation control devices.

Section 1604.2. Non-federally-regulated appliances; standards applicable to both sale (California enforcement) and to Title 24 construction (California enforcement).

These standards are exclusively state law. No appliance within the scope of this section shall be sold in California or installed in Title 24 construction unless, pursuant to section 1605, the manufacturer has certified that the appliance complies with the standards listed in this section and the appliance is listed in the database. In addition, no appliance within the scope of this section shall be sold in California, or installed in Title 24 construction, unless the manufacturer has (1) tested it as required by section 1603, and (2) marked it as required by section 1606. The standards in this section are enforced by the California Energy Commission with regard to sale, and by the California Energy Commission and local building departments with regard to installation in Title 24 construction.

In addition, no appliance within the scope of this section shall be installed in Title 24 construction, unless the manufacturer has (1) tested it as required by section 1603, (2) reported its performance as required by section 1605, and (3) marked it as required by section 1606.

(a) Refrigerators, Refrigerator-freezers and Freezers.

(1) Energy efficiency standard for wine chillers. The energy consumption of wine chillers shall be not greater than the values shown in Table A-3

Table A-3

Product class	*Energy standards equations for maximum energy use (kWh/yr)*
Wine chillers with manual defrost that are consumer products	13.7V + 267
Wine chillers with automatic defrost that are consumer products	17.4V + 344

V=volume in ft^3

(2) There is no energy efficiency standard or energy design standard for freezers with volume exceeding 30 ft^3.

(3) There is no energy efficiency standard or energy design standard for commercial refrigerators, including refrigerated bottled and canned beverage vending machines.

(4) See Sections 1604.1(a) for standards for refrigerators, refrigerator-freezers, and freezers that are federally-regulated consumer products

(b) Room Air Conditioners, Room Air Conditioning Heat Pumps, Packaged Terminal Air Conditioners, and Packaged Terminal Heat Pumps.

There is no energy efficiency standard or energy design standard in this section for room air conditioners, room air conditioning heat pumps, packaged terminal air conditioners, or packaged terminal heat pumps. See Section 1604.1(b) for standards for such appliances.

(c) Central Air Conditioners: (1) Energy efficiency standards for large air-source heat pumps, water-source heat pumps and groundwater-source heat pumps. The EER and COP as applicable for all

air-source heat pumps => 240,000 Btu/hour, water-source heat pumps and groundwater-source heat pumps shall be not less than the values shown in Table C-6.

Table C-6

Category	*Rated Output*	*Rating Condition*	*Efficiency*
Air source heat pumps (cooling) including Computer Room Air Conditioners	>240,000 <760,000 Btu/hr	Standard Rating	8.5 EER 7.5 IPLV
	>760~~0~~,000 Btu/hr	Standard Rating	8.2 EER 7.5 IPLV
Air source heat pumps (heating)	>240,000 Btu/hr	47° F outdoor db 17° F outdoor db	2.9 COP 2.0 COP
Water source heat pumps (cooling) including Computer Room Air Conditioners	>65,000 < 135,000 Btu/hr	85° F entering water temperature[ab]	10.5 EER
Groundwater-source Heat Pumps (cooling)	<135,000 BTU/HR Cooling Capacity	70° F entering water temperature[ab] 50° F entering water temperature[ab]	11.0 EER 11.5 EER
Groundwater-source Heat Pumps (heating)	All	70° F entering water temperature[ab] 50° F entering water temperature[ab]	3.5 COP 3.0 COP

EER = Energy efficiency ratio
COP = Coefficient of performance
IPLV = Integrated part load value
a = Air entering indoor section 70 db/60 wb (max.)
b = Water Flow Rate Per Mfg. Spec.

See Sections 1604.1(c) and 1604.3(c) for energy efficiency standards for other types of central air conditioners.

(d) Spot Air Conditioners. There is no energy efficiency standard or energy design standard for spot air conditioners.

(e) Gas and Oil Space Heaters: boilers, central furnaces, duct furnaces, and unit heaters.

(1) The efficiency of all new three phase boilers, boilers with input of 300,000 Btu/hr or more that are not packaged boilers, three phase central furnaces, duct furnaces, and

unit heaters shall be not less than the values shown in Tables E-5, E-6, and E-7, as applicable.

Table E-5

Category	*Rating Condition*	*Efficiency*
Three phase gas and oil boilers<300,000 BTU/HR	Seasonal Rating (AFUE) Gas steam boilers All others	75% 80%
Non-packaged gas boilers =>300,000 BTU/HR	Max. Rated Capacity[a] Combustion Efficiency Min. Rated Capacity[a] Combustion Efficiency Energy Consumption During Standby[b]	80% 80% 147 watts
Non-packaged oil boilers =>300,000 BTU/HR	Max. Rated Capacity[a] Combustion Efficiency Min. Rated Capacity[a] Combustion Efficiency	83% 83%

A Provided and allowed by the controls

B For boilers designed expressly for use with liquefied petroleum gases, the energy consumption during standby shall not exceed 352 watts

Table E-6

Category	*Rated Input*	*Rating Condition*	*Efficiency*
Three phase mobile home central furnaces	<225,000 BTU/HR	Seasonal Rating (AFUE)	75%
Other three phase central furnaces	<225,000 BTU/HR	Seasonal Rating (AFUE)	78%

Table E-7

Category	*Rating Condition*	*Thermal Efficiency*
Gas Duct Furnaces	Max. Rated Cap.[a] Min. Rated Cap.[a] Energy Consumption During Standby[b]	80% 75% 10 watts
Gas Unit Heaters	Max. Rated Cap.[a] Min. Rated Cap.[a] Energy Consumption During Standby[b]	80% 74% 10 watts
Oil Unit Heaters	Max. Rated Cap.[a] Min. Rated Cap.[a]	81% 81%

a Provided and allowed by the controls
b For duct furnaces and unit heaters designed expressly for use with liquefied petroleum gases, the energy consumption during standby shall not exceed 147 watts.

(2) There is no energy efficiency standard or energy design standards for infrared gas heaters.

(3) See Section~~s~~ 1604.1(e) and ~~1604.3(e)~~ 1604.2(e)(3) for additional standards for boilers.

(f) Water Heaters

(1) The energy factor of all small water heaters that have a volume of 20 gallons or more and that are not within the scope of the test procedure in 10 CFR Section 430.23(e) (1999) shall be not less than the applicable values shown in Table F-~~3~~(4).

Table F-~~3~~(4)

Water Heater Type	*Energy Factor*
Gas	0.62 - (.0019 x V)
Electric (including heat pump)	0.93 - (.00132 x V)
Oil	0.59 - (.0019 x V)
where V = volume in gallons	

(2) See Section 1604.1(f) for energy efficiency standards for other water heaters.

(g) Pool Heaters

(1) Energy design standard for natural gas pool heaters. Natural gas pool heaters shall not be equipped with constant burning pilots.

(2) Energy design standard for all pool heaters. All pool heaters shall have a readily accessible on-off switch that is mounted on the outside of the heater and that allows shutting off the heater without adjusting the thermostat setting.

(3) See Section 1604.1(g) for energy efficiency standards for gas and oil pool heaters.

(4) There is no energy efficiency standard or energy design standard for heat pump pool heaters.

(h) Plumbing Fittings: tub spout diverters.

(1) The flow rate of all tub spout diverters shall be no greater than the values shown in Table H-2.

Table H-2

Plumbing Fittings	*Maximum Flow Rate*
Tub spout diverters	
when new	0.1 gpm at 80 psi
after 15,000 cycles of diverting	0.3 gpm at 80 psi

(2) See Section 1604.1(h) for energy efficiency standards for showerheads and faucets.

(i) Plumbing Fixtures.

See Section 1604.1(i) for energy efficiency standards for plumbing fixtures.

(j) Fluorescent Lamp Ballasts.

See Section 1604.1(j) for energy efficiency standards for fluorescent lamp ballasts.

(k) Lamps

See Section 1604.1(k) for energy efficiency standards for lamps.

(l) Dishwashers

See Section 1604.1(l) for energy efficiency standards for dishwashers.

(m) Clothes Washers

See Section 1604.1(m) for energy efficiency standards and design standards for clothes washers.

(n) Clothes Dryers

See Setion 1604.1(n) for energy efficiency standards for clothes dryers.

(o) Kitchen Ranges and Ovens

See Section 1604.1(o) for energy design standards for kitchen ranges and ovens.

(p) Television Sets

There ~~are~~ is no energy efficiency standard~~s~~ or energy design standard~~s~~ for television sets.

1604.2 Non-Federally-Regulated Appliances – Sale and Installation Standards

(q) Electric Motors

See Section 1604.1(q) for energy efficiency standards for electric motors.

(r) Lighting Control Devices

See Section 1604.3(r) for design standards for lighting control devices.

(s) Demand Ventilation Control Devices

See Section 1604.3(s) for design standards for demand ventilation control devices.

Section 1604.3. Non-federally-regulated appliances; standards applicable only to Title 24 construction (California enforcement).

These standards are exclusively state law. No appliance within the scope of this section shall be installed in Title 24 construction unless, pursuant to section 1605, the manufacturer has certified that the appliance complies with the standards listed in this section and the appliance is listed in the appropriate database. The standards in this section are enforced by the Commission and local building departments.

In addition, no appliance within the scope of this section shall be installed in Title 24 construction, unless the manufacturer has (1) tested it as required by section 1603 and (2) marked it as required by section 1606.

(a) Refrigerators, Refrigerator-freezers and Freezers.

See Sections 1604.1(a) and 1604.2(a) for energy efficiency standards for refrigerators, refrigerator-freezers and freezers.

(b) Room air conditioners, room air conditioning heat pumps, packaged terminal air conditioners, and packaged terminal heat pumps.

See Section~~s~~ 1604.1(b) ~~and 1604.2(b)~~ for energy efficiency standards for room air conditioners, room air conditioning heat pumps, packaged terminal air conditioners, and packaged terminal heat pumps.

(c) Central Air Conditioners: Unitary Air Conditioners and Heat Pumps > 135,000 Btu/hour; Heat Pumps with Supplementary Electric Resistance Heaters; Water-Chilling Packages.

(1) Efficiency standards for Unitary Air Conditioners and Heat Pumps > 135,000 Btu/hour; Water-Chilling Packages. The efficiency of unitary air conditioners and heat pumps > 135,000 Btu/hour, and water-chilling packages, shall be not less than the values shown in Table C-7.

Table C-7

Equipment Type	*Size Category*	*Subcategory Or Rating Condition*	*Efficiency Requirement*
Unitary air conditioners, air cooled including computer room air conditioners	> 240,000 < 760,000 Btu/hr.	—	8.5 EER 7.5 IPLV
	> 760,000 Btu/hr.	—	8.2 EER 7.5 IPLV
Unitary air conditioners, water or evaporatively cooled including computer room air conditioners	> 240,000 Btu/hr.	—	9.6 EER 9.0 IPLV
Condensing units, air cooled	> 135,000 Btu/hr.	—	9.9 EER 11.0 IPLV
Condensing units, water or evaporatively cooled	> 135,000 Btu/hr.	—	12.9 EER 12.9 IPLV
Water cooled water chilling packages	< 150 tons	—	3.8 COP 3.9 IPLV
	> 150 < 300 tons	—	4.2 COP 4.5 IPLV
	> 300 tons	With CFC refrigerants with ozone-depletion factors greater than those for R-22	5.2 COP 5.3 IPLV
		All others	4.7 COP 4.8 IPLV
Air cooled water chilling Packages	< 150 tons	With condenser	2.7 COP 2.8 IPLV
	> 150 tons	With condenser	2.5 COP 2.5 IPLV
	All sizes	Without condenser	3.1 COP 3.2 IPLV

(2) Design Standard: Controls for Heat Pumps with Supplementary Electric Resistance Heaters. Heat pumps with supplementary electric resistance heaters shall have controls:

A. That prevent supplementary heater operation when the heating load can be met by the heat pump alone; and

B. In which the cut-on temperature for compression heating is higher than the cut-on temperature for supplementary heating, and the cut-off temperature for compression heating is higher than the cut-off temperature for supplementary heating.

EXCEPTION: The controls may allow supplementary heater operation during:

A. Defrost; and

B. Transient periods such as start-ups and following room thermostat setpoint advance, if the controls provide preferential rate control, intelligent recovery, staging, ramping or another control mechanism designed to preclude the unnecessary operation of supplementary heating.

See also Sections 1604.1(c) and 1604.2(c) for energy efficiency standards for other central air conditioners

(d) Spot Air Conditioners.

There is no energy efficiency standard or energy design standard for spot air conditioners.

(e) Gas and Oil Space Heaters.

See Sections 1604.1(e) and 1604.2(e) for energy efficiency standards for ~~other~~ gas and oil space heaters.

(f) Water Heaters.

See Sections 1604.1(f) and 1604.2(f) for energy efficiency standards for water heaters.

(g) Pool Heaters

See Section 1604.1(g) and 1604.2(g) for energy efficiency standards and energy design standards for pool heaters.

(h) Plumbing Fittings.

See Sections 1604.1(h) and 1604.2(h) for energy efficiency standards for plumbing fittings.

(i) Plumbing Fixtures.

See Section 1604.1(i) for energy efficiency standards for plumbing fixtures.

(j) Fluorescent Lamp Ballasts.

See Section 1604.1(j) for energy efficiency standards for fluorescent lamp ballasts.

(k) Lamps

See Section 1604.1(k) for energy efficiency standards for lamps.

(l) Dishwashers

See Section 1604.1(l) for energy efficiency standards for dishwashers.

(m) Clothes Washers

See Section 1604.1(m) for energy efficiency and design standards for clothes washers.

(n) Clothes Dryers

See Section 1604.1(n) for energy efficiency standards for clothes dryers.

(o) Kitchen Ranges and Ovens

See Section 1604.1(o) for energy design standards for gas kitchen ranges and ovens.

(p) Television Sets

There ~~are~~ is no energy efficiency standard~~s~~ or energy design standard~~s~~ for television sets.

(q) Electric Motors

See Section 1604.1(q) for energy efficiency standards for electric motors.

(r) Lighting Control Devices

The standards for automatic time switch control devices, occupant-sensing devices, automatic daylighting control devices, lumen maintenance control devices, and interior photocell sensor devices are as follows:

(1) All Devices: Instructions for Installation and Calibration. The manufacturer shall provide step-by-step instructions for installation and start-up calibration of the device.

(2) All Devices: Status Signal. The device shall have an indicator that visibly or audibly informs the device operator that it is operating properly, or that it has failed or malfunctioned.

EXCEPTION : Photocell sensors or other devices where a status signal is infeasible because of inadequate power.

(3) Automatic Time Switch Control Devices. Automatic time switch control devices shall:

(A) Be capable of programming different schedules for weekdays and weekends; and

(B) Have program backup capabilities that prevent the loss of the device's program and time setting for at least 10 hours if power is interrupted.

(4) Occupant-sensing Devices. Occupant-sensing devices shall be capable of automatically turning off all the lights in an area no more than 30 minutes after the area has been vacated. In addition, ultrasonic and microwave devices shall have a built-in mechanism that allows calibration of the sensitivity of the device to room movement in order to reduce the false sensing of occupants, and shall comply with either Item ~~1~~(A) or ~~2~~(B) below, as applicable:

(A) If the device emits ultrasonic radiation as a signal for sensing occupants within an area, the device shall:

(i) Have had a Radiation Safety Abbreviated Report submitted to the Center for Devices and Radiological Health, Federal Food and Drug Administration, under 21 CFR, Section 1002.12 (1996), and a copy of the report shall have been submitted to the California Energy Commission; and

(ii) Emit no audible sound; and

(iii) Not emit ultrasound in excess of the following decibel (dB) values, measured no more than five feet from the source, on axis:

MIDFREQUENCY OF SOUND PRESSURE THIRD-OCTAVE BAND (in kHz)	**MAXIMUM dB LEVEL WITHIN THIRD-OCTAVE BAND (in dB reference 20 micropascals)**
< 20	80
20 => 25	105
25 => 31.5	110
31.5 >or more	115

(B) If the device emits microwave radiation as a signal for sensing occupants within the area, the device shall:

(i) Comply with all applicable provisions in 47 CFR, Parts 2 and 15 (1996), and have an approved Federal Communications Commission Identifier that appears on all units of the device and that has been submitted to the commission; and

(ii) Not emit radiation in excess of one milliwatt per square centimeter measured at no more than five centimeters from the emission surface of the device; and

(iii) Have permanently affixed to it installation instructions recommending that it be installed at least 12 inches from any area normally used by room occupants.

(5) Automatic Daylighting Control Devices. Automatic daylighting control devices shall:

(A) Be capable of reducing the light output of the general lighting of the controlled area by at least one half while maintaining a uniform level of illuminance throughout the area; and

(B) If the device is a dimmer, provide electrical outputs to lamps for reduced flicker operation through the dimming range and without causing premature lamp failure; and

(C) If the device is a stepped dimming system, incorporate time-delay circuits to prevent cycling of light level changes of less than three minutes; and

(D) If the device uses step switching with separate on and off settings for the steps, have sufficient separation (deadband) of on and off points to prevent cycling; and

(E) Have provided by the manufacturer step-by-step instructions for installation and start-up calibration to design footcandle levels.

(6) Lumen Maintenance Control Devices. Lumen maintenance control devices shall:

(A) Be capable of reducing the light output of the general lighting of the controlled area by at least 30 percent while maintaining a uniform illuminance throughout the area; and

(B) Provide electrical outputs to lamps for reduced flicker operation through the dimming range and without causing premature lamp failure; and

(C) Incorporate an alarm, either audible or visible, to announce when a specified setpoint has been reached; and

(D) Have provided by the manufacturer step-by-step instructions for installation and start-up calibration to design footcandle levels.

(7) Interior Photocell Sensor Devices. Interior photocell sensors shall not have a mechanical slide cover or other device that permits easy unauthorized disabling of the control, and shall not be incorporated into a wall-mounted occupant-sensing device.

(s) Demand Ventilation Control Devices

The standards for demand ventilation control devices are as follows:

(1) All Devices: Instructions for Installation and Calibration. The manufacturer shall provide step-by-step instructions for installation and start-up calibration of the device.

(2) All Devices: Status Signal. The device shall have an indicator that visibly or audibly informs the device operator that it is operating properly, or that it has failed or malfunctioned.

(3) Carbon dioxide demand ventilation control devices. Carbon dioxide demand ventilation control devices shall limit the carbon dioxide level to no more than 800 ppm while the space is occupied.

(4) Carbon dioxide demand ventilation control devices. Carbon dioxide demand ventilation control devices shall include supporting documentation describing how the device operates, the level of sensitivity of the device to volatile organic compounds, the method of testing the device, and how the device is tested; and shall include the capability of being adjusted to provide the equivalent air quality in buildings as a building ventilated to the levels required by Table No. 1-F of Section 121(b)(2) of Part 6 of Title 24 of the California Code of Regulations.

Section 1605. Filing by Manufacturers; Listing of Models in Database.

(a) Filing of Statements for New or Modified Models.

Each manufacturer of any appliance within the scope of section 1601 shall file with the Executive Director a statement containing the following material at least 60 days before the sale, or offering for sale in California, or installation in Title 24 construction, of any new or modified model is begun.

(1) Manufacturer information.

(A) The name, address, and telephone number, and, if available, fax number, URL (website) address, and e-mail address, of the manufacturer.

(B) The name, address, and telephone number, and, if available, fax number and e-mail address, of the individual to contact concerning the statement and (if a different individual) of the individual signing the declaration pursuant to section 1605(a)(4).

(2) Appliance information.

(A) The type of appliance that the model is, according to the types of appliances listed in sections 1604.1, 1604.2, or 1604.3, or, if the model does not appear in one of those sections, section 1601.

(B) The brand name of the model.

(C) The model number as it appears on the appliance nameplate.

(3) Testing and performance information.

(A) A statement that the appliance model has been tested in accordance with all applicable requirements of section 1603.

(B) The name, address, and telephone number, and, if available, fax number, URL (website) address, and e-mail address, of the laboratory or other institution where the testing of the model was performed.

(C) The dates of the testing of the model.

(D) The test reports upon which the manufacturer relies in filing energy performance information pursuant to paragraph (E) of this subsection; provided, however, that the manufacturer is not required to provide the test reports as part of the statement if the Executive Director determines that, for the model at issue, a certification program exists for that product that includes provisions for verification and challenge of equipment efficiency ratings, and that the model is included in that program.

(E) The applicable form (incorporated by reference) in Table T, and the information required thereby, including but not limited to the model's energy efficiency, consumption, rating, or other energy performance. Each combination of data representing the manufacturer, brand name, design characteristics and energy performance shall be assigned a different model number, and be listed separately.

Table T

Number	Date	*Title*

CEC 88	Sep 1999	Refrigerator and Freezer Certification Form
CEC 150	Sep 1999	Commercial Refrigerator and Freezer Certification Form (Including vending machines)
CEC 96	Sep 1999	Room Air Conditioner Certification Form (Including packaged terminal units)
CEC 93	Sep 1999	Central Air Conditioner and Heat Pump Certification Form
CEC 165	Sep 1999	Spot Air Conditioner Certification Form
CEC 92	Sep 1999	Gas and Oil Fan Type Central Furnace Certification Form
CEC 94a	Sep 1999	Gas Gravity Type Wall and Floor Furnace, Room Heater, Unit Heater and Duct Furnace Certification Form
CEC 94b	Sep 1999	Gas Fan Type Wall and Floor Furnace Certification Form
CEC 97	Sep 1999	Boiler Certification Form
CEC 89a	Sep 1999	Small Gas or Oil Storage Type Water Heater Certification Form
CEC 89b	Sep 1999	Large Gas or Oil Storage Type Water Heater Certification Form
CEC 89d	Sep 1999	Small Gas or Oil Instantaneous Type Water Heater Certification Form
CEC 89e	Sep 1999	Large Gas or Oil Instantaneous Type Water Heater Certification Form
CEC 90a	Sep 1999	Small Electric Storage Type and Heat Pump Type Water Heater Certification Form
		Large Electric Storage Type Water Heater Certification Form
CEC 90b	Sep 1999	Plumbing Fixture and Fittings Certification Form
CEC 95	Sep 1999	Fluorescent Ballast Certification Form
CEC 111	Sep 1999	Fluorescent Lamp and Incandescent Reflector Lamp Certification Form
CEC 192	Sep 1999	Pool Heater Certification Form
CEC 181	Sep 1999	Dishwasher, Clothes Washer, Clothes Dryer, Range and Oven Certification Form
CEC 183	Sep 1999	Television Set Certification Form
CEC 193	Sep 1999	Electric Motor Certification Form
CEC 191	Sep 1999	

(4) Declaration.

(A) Each statement shall include a declaration, executed under penalty of perjury, that (1) all the information provided in the statement is true, complete, and accurate, and is in compliance with all applicable provisions of these regulations; (2) if the statement is being filed electronically, that the requirements of Section 1605(i) have been and are being complied with; and (3) for appliances for which there is an energy efficiency or energy design standard in Section 1604.1, 1604.2, or 1604.3, that the appliance model complies with the applicable standards.

(B) If the manufacturer is a corporation, partnership, or other business entity, the declaration shall be signed by an individual authorized to make the declaration and file the statement on behalf of the business entity, and the declaration shall contain an affirmation that the individual signing is so authorized.

(b) Modification of Statements.

The manufacturer shall file a modified statement containing the information shown under "Description of Model" on the appropriate form (referenced in Table T) and all other information being modified, within 10 days after any of the information in the most recent previously-filed statement has changed, including but not limited to cessation of sale or manufacture of a model.

(c) Review of Statements by Executive Director.

Within 45 days after receipt of a statement under section 1605(a) or 1605(b), the Executive Director shall determine whether the statement is complete and accurate on its face, including but not limited to a determination of whether any declaration required by Section 1605(a)(4) has been received, and shall inform the manufacturer of his or her determination. If the Executive Director determines that the statement is not complete and accurate on its face, he or she shall explain what is necessary to remedy the defects and ask the manufacturer to provide supplemental information to remedy such defects. If the Executive Director determines that the statement is complete and accurate on its face, he or she shall cause the model to be included in the database established pursuant to section 1605(d), which shall thereby authorize the sale and offering for sale or installation in Title 24 construction, as applicable of the model pursuant to section 25402(c)(1) of the Public Resources Code and section 1607 of these regulations. If the Executive Director does not inform the manufacturer within 45 days after receipt of the statement or after receipt of supplemental information, the statement shall be deemed complete and accurate on its face and the model shall be included in the database.

(d) Database of Appliance Models.

(1) Creation of database. The Executive Director shall create and maintain a database of information on all models for which complete and accurate statements have been received

pursuant to section 1605(a) or 1605(b), and which have not been

removed from the database pursuant to sections 1605(e), 1605(f), 1605(g), or 1608(c).

(2) Status of database. The database is a directory published by the Commission within the meaning of Title 24, California Code of Regulations, Part 6, section 100(g).

(e) Annual Confirmation of Database Listings.

Annually, and more often if reasonably necessary, the Executive Director shall, by writing via certified mail to the most recent address filed pursuant to section 1605(a)(1)(B), request each manufacturer of a model listed in the database to confirm the validity, or to correct, all of the information in each of its database listings, including but not limited to the model's compliance with any applicable standard adopted since the most recent filing by the manufacturer. If, within 30 days after the mailing, there is any model for which the Executive Director has not received a reply from the manufacturer that confirms the validity of, or corrects, all of the information in the database listing for that model, the model shall be removed from the database.

(f) Assessment of Completeness and Accuracy of Manufacturer Statements.

Notwithstanding any other provision of these regulations, the Executive Director may at any time challenge the completeness and accuracy, and compliance with the requirements of this section, of any statement filed pursuant to this section. If the statement is on its face incomplete or inaccurate, or if the Executive Director determines that the statement otherwise fails to comply with any of the requirements of this section, then he or she shall, ten days after providing written notice by certified mail to the person designated in 1605(a)(1)(B), remove the model from the database.

(g) Discontinued Models.

Within 10 days after any model has ceased being sold or offered for sale in California, the manufacturer shall file a statement so stating and containing the information required by sections 1605(a)(1), (2), and (4). Immediately upon receipt of such a statement, the Executive Director shall remove the model from the database.

(h) Filing by Third Parties**.**

A third party may file on behalf of a manufacturer the information required by sections 1605(a)(1) ~~(3)~~, 1605(a)(2), 1605(a)(3), 1605(b), 1605(e), or 1605(g) if:

(1) the manufacturer submits to the third party:

(A) the information that is required;

(B) a declaration under penalty of perjury, and where applicable pursuant to section 1605(a)(4)(B), that the information is true, complete, accurate, and in compliance

with all applicable provisions of these regulations, and, for appliances for which there is an energy efficiency or energy design standard in Section 1604.1, 1604.2, or 1604.3, that the appliance model complies with the applicable standards; and

(C) an authorization, filed with both the third party and the Commission, for the third party to submit the information to the Commission on behalf of the manufacturer;

(2) the third party submits to the Commission:

(A) the information that is required, including but not limited to the model number as it appears on the appliance nameplate for every model for which information is submitted, provided that the third party shall not submit any information on an appliance model that is already in the database and for which there are no changes in the present submittal;

(B) an indication of additions, changes, and deletions for appliance models that are already in the database;

(C) a declaration under penalty of perjury, and where applicable pursuant to section 1605(a)(4)(B), that:

(i) to the best of the third party's knowledge and belief, the information is the same as the information submitted by the manufacturer to the third party; the information is true, complete, accurate, and in compliance with all applicable provisions of these regulations; and, for appliances for which there is an energy efficiency or energy design standard in Section 1604.1, 1604.2, or 1604.3, the appliance model complies with the applicable standards; and

(ii) the requirements of paragraphs (3) and (4) of this subsection are met;

(3) the third party has an agreement with the manufacturer that allows the third party to challenge the truth, accuracy, and completeness of information submitted by the manufacturer to the third party and to refuse to submit to the Commission information that the third party believes is not truthful, accurate, or complete; and

(4) the third party provides, upon ten days' written notice from the Executive Director, all information provided by the manufacturer and all information relating to any challenges pursuant to paragraph (3) of this subsection.

Whether a manufacturer files information required by this section by itself or via a third party, the manufacturer remains responsible for the truth, accuracy, completeness, and timeliness of all required submittals.

At any time the Executive Director may forbid a third party from making filings and may remove affected appliance models from the database if he or she finds that the criteria in this subsection are not being met.

The provisions of section 1608 are applicable to all submittals and filings, whether made by a manufacturer directly or by a third party on behalf of a manufacturer.

(i) Electronic filing.

(1) The statements and information required by sections 1605(a)(1)-(4), 1605(b), 1605(e), or 1605(g), or allowed by sections 1605(h), may be filed electronically by a manufacturer, or by a third party pursuant to section 1605(h), if:

(A) the electronic filing uses a format approved by the Executive Director;

(B) within three days of the electronic filing being made, an exact paper copy of all declarations required by section 1605(a)(4), 1605(h)(1)(B), or 1605(h)(2)(C) is executed by a person authorized under the appropriate section to execute it and is attached to an exact paper copy of the information submitted;

(C) for two years from the date of filing the person making the filing keeps the exact paper copies required by paragraph (B) of this subsection ~~for two years from the date of filing~~ and provides those copies to the Executive Director upon ten days' written request.

(2) Any electronic filing constitutes a representation by the person making the filing that all applicable requirements of these regulations have been ~~and will continue to be met~~.

At any time the Executive Director may forbid electronic filings by any person, or generically, and may remove affected appliance models from the database, if he or she finds that the criteria in this subsection are not being met.

(j) Third-Party Directories.

A directory, or a part thereof, published by a person other than the Commission may be used for any purpose that the database established pursuant to section 1605(d) is used for, if the Executive Director determines that:

(1) All of the requirements of sections 1605(h)(1), 1605(h)(2)(C), 1605(h)(3), and 1605(h)(4) for third party submittals are met for the directory;

(2) For appliances that are listed in one of the following directories, the directory contains all of the information contained therein:

ARI – Unitary Directory – Effective January 1, 1999 – June 30, 1999
Section AC (both Split System and Single Package)
Section HP (both Split System and Single Package)
ARI – Applied Directory – Effective January 1, 1999 – June 30, 1999
Sections GSHP, GWHP, PTAC, PTHP, ULE and WSHP
GAMA – Consumers' Directory of Certified Efficiency Ratings – April 1999
Chapter I: Gas and Oil Central Heating Equipment
Section 1: Gas Furnaces
Section 2: Oil Furnaces
Section 3: Gas Boilers
Section 4: Oil Boilers
Chapter III: Gas, Oil, Electric and Combination Water Heaters
Section 1: Gas Water Heaters
Section 2: Oil Water Heaters
Section 3: Electric Water Heaters
Section 4: Heat Pump Water Heaters with Tank
Section 5: Heat Pump Water Heaters without Tank;

(3) The directory contains no model that fails to meet an applicable energy efficiency or energy design standard established in or pursuant to NAECA or EPAct, or an applicable requirement of this article (including but not limited to Section 1604.1, 1604.2, or 1604.3), whether the model fails because it does not meet the applicable standard or requirement, because the manufacturer has stated or certified that the model meets a standard not applicable to it, or because of another reason;

(4) Each directory contains the following statement, in at least 20 point bolded type, on the front cover or first page:

"This directory (insert parts if appropriate) has been approved by the California Energy Commission (Commission) for determining compliance with its appliance efficiency regulations (Title 24~~0~~, California Code of Regulations, Sections 1601-1608). Unless indicated otherwise, any model listed in this directory (insert parts if appropriate) may be sold or installed in new construction in California. Models made by manufacturers who participate in this directory but have not given authorization for data submittal to the Commission cannot use this directory for determining compliance with the Commission's appliance efficiency regulations. For information about these models, models that are beyond the scope of this directory, or models produced by manufacturers who do not participate in this directory, please contact the Commission's Building Standards Hotline at 916-654-5106, 800-772-3300 (in California only), or <www.energy.ca.gov/efficiency/appliances/index.html>; and

(5) Within 7 days of publication of a directory or supplement, the third party mails, at no cost to recipients, a copy of the directory or supplement to the Executive Director and to all California building officials as specified by the Executive Director, and provides a list

of the building officials to whom the directory or supplement was sent to the Executive Director.

If the Executive Director at any time determines that any of the provisions of this subsection or any other applicable provision of law is not complied with, upon written notice from the Executive Director the third party shall immediately remove from the directory any model designated by the Executive Director and shall immediately indicate in the directory that such model cannot be sold or offered for sale in California or installed in Title 24 construction. The model shall be removed, or so indicated in the directory, for a period of at least sixty days, until the end of a proceeding held to consider the matter pursuant to Sections 11445.10-11445.60 of the California Government Code (or, at the third party or affected manufacturer's option, pursuant to Sections 11425.10-11425.60 of the California Government Code).

Section 1606.Marking of Appliances

(a) All Appliances: Manufacturer's Name or Brand Name, Model Number, Date of Manufacture. The manufacturer's name or brand name, and the date of manufacture shall be permanently and legibly displayed on an accessible place on each unit. The model number shall be permanently and legibly displayed on the nameplate.

(b) Federally-Regulated Consumer Products: Labeling Provisions. The marking required by the regulations of the Federal Trade Commission in 16 CFR Part 305 shall be displayed on all federally-regulated consumer products of the following classes:

Refrigerators
Refrigerator-Freezers
Freezers
Central air conditioners
Heat pumps
Dishwashers
Water heaters
Room air conditioners
Warm air furnaces
Boilers
Pool heaters
Clothes washers
Fluorescent lamp ballasts
Showerheads
Faucets
Toilets
Urinals
General service fluorescent lamps
Incandescent reflector lamps

(c) Federally-Regulated Commercial and Industrial Equipment: Energy Performance. Appliances listed in Table U which are federally-regulated commercial and industrial equipment shall also be marked, permanently and legibly on an accessible place on each unit, and also on printed ~~matter~~ material which is displayed or distributed at the point of sale, with the energy performance information shown in Table U.

Table U

Class	*Energy Performance Information*
Split system central air conditioners	Rated cooling capacity, EER (on printed material only)
Single package central air conditioners	Rated cooling capacity, EER
Split system heat pumps	Rated cooling capacity, rated heating capacity, EER (on printed material only), COP (on printed material only)
Single package heat pumps	Rated cooling capacity, rated heating capacity, EER, COP
Package terminal air conditioners	Rated cooling capacity, EER
Package terminal heat pumps	Rated cooling capacity, rated heating capacity, EER, COP
Warm air furnaces	Rated input, thermal efficiency, combustion efficiency
Packaged boilers	Rated input, thermal efficiency, combustion efficiency
Water heaters	Rated input, rated storage volume, measured storage volume, thermal efficiency, standby loss
Hot water supply boilers	Rated input, rated storage volume, measured storage volume, thermal efficiency, standby loss

Section 1607.Requirements for Sale, Offering for Sale, and Installation in New Construction.

(a) General Requirements. Except as provided in subsections (b) and (c), any appliance model within the scope of section 1601 may be sold or offered for sale in California, or installed in Title 24 construction, only if:

(1) the model appears in the most recent database established pursuant to section 1605(d); and

(2) the manufacturer has:

(A) tested the model as required by section 1603;

(B) marked all units of the model as required by section 1606; and

(C) for any model for which there is a standard established under section 1604.1, 1604.2, and 1604.3, certified pursuant to section 1605(a)(4) that the model meets the applicable standard.

(D) for all models, the manufacturer has reported the energy performance of the model to the building official or other person having the authority to grant a permit for the Title 24 construction in which the model will be installed.

(b) Models for Which There is a Standard in Section 1604.3. Except as provided in subsection (c), models for which there is a standard in Section 1604.3 may be installed in Title 24 construction only if:

(1) for unitary products 240,000 Btu/hour and greater, the manufacturer has:

(A) tested the model as required by section 1603;

(B) marked all units of the model as required by section 1606~~; and~~.

(2) for condensing units, the manufacturer has:

(A) tested the model as required by section 1603;

(B) marked all units of the model as required by section 1606~~; and~~.

(c) Lighting Control Devices and Demand Ventilation Control Devices. Lighting control devices and demand ventilation control devices may be installed in Title 24 construction only if:

(1) the model appears in the most recent database established pursuant to section 1605(d); and

(2) the manufacturer has:

(A) marked all units of the model as required by section 1606; and

(B) certified pursuant to section 1605(a)(4) that the model meets the applicable standard in section 1604.3.

Section 1608.Enforcement.

(a) Submittal of test reports.

Each manufacturer shall, within ten days of receipt of a written request from the Executive Director sent to one of the locations designated in section 1605(a)(1)(B), provide a copy of the test report that describes the results of the test performed pursuant to section 1603, and that provides the basis for the efficiency or consumption information submitted pursuant to section 1605(a)(3)(D), for any appliance model.

(1) If the Executive Director does not receive a copy of the test report within ten days of the manufacturer's receipt of the request, he or she shall make another request pursuant to section 1608(a). If the Executive Director does not receive a copy of the test report within ten days of the manufacturer's receipt of the second request, he or she shall remove the model from the database.

(2) If the test report indicates on its face that the energy consumption of the model is greater than, or the energy efficiency of the model is less than, the consumption or efficiency certified by the manufacturer pursuant to section 1605(a)(3)(D) and 1605(a)(3)(E), the Executive Director shall modify the listing of the model in the database to reflect accurately the test report.

(3) If the test report indicates on its face that the model does not comply with the applicable standard in Section 1604.1, 1604.2, or 1604.3, the Executive Director shall, ten days after providing written notice by certified mail to the person designated in section 1605(a)(1)(B), remove the model from the database.

(b) Inspection of appliances.

(1) The Executive Director shall periodically inspect appliances sold or offered for sale in the state, or installed or intended to be installed in Title 24 construction, to determine whether they conform with the applicable energy design standards of Sections 1604.1, 1604.2, and 1604.3 and with the applicable marking requirements of Section 1606.

(2) An inspection of a model shall consist of inspection of one unit.

(A) If the inspection indicates that the model complies with the applicable energy design standards and marking requirements, the matter shall be closed.

(B) If the inspection indicates that the model does not comply with an applicable energy design standard or marking requirement, the Commission shall undertake a proceeding pursuant to Sections 11445.10-11445.60 of the California Government Code (or, at the manufacturer's option, pursuant to Sections 11425.10-11425.60 of the California Government Code). If the Commission confirms the Executive

Director's determination, then he or she shall remove the model from the database, thus making illegal the sale or offering for sale, or installation in Title 24 construction of the model.

(c) Testing of appliances.

The Executive Director shall periodically cause, at laboratories meeting the requirements of section 1603, the testing of appliance models sold or offered for sale in the state, or installed or intended to be installed in Title 24 construction, to determine whether they conform with the applicable energy efficiency standards in Sections 1604.1, 1604.2, and 1604.3, and to determine whether their conformance is as reported or certified by the manufacturer pursuant to Sections 1605(a)(3)(E) and 1605(a)(4). Testing shall be performed as follows:

(1) Initial test. The Executive Director shall perform one initial test, using the applicable test procedure specified in section 1603.

(A) Test shows performance is as required by standard and as certified by manufacturer. If the initial test result indicates that the energy consumption of the model is no greater than, or the energy efficiency of the model is no less than, the consumption or efficiency that is permitted or required by the applicable standard in Section 1604.1, 1604.2, or 1604.3, and that was reported or certified by the manufacturer pursuant to Sections 1605(a)(3)(E) and 1605(a)(4), the matter shall be closed.

(B) Test shows performance is not as required by standard or is not as certified by manufacturer. If the initial test result indicates that the energy consumption of the model is greater, or the energy efficiency of the model is less, than the consumption or efficiency that is permitted or required by the applicable standard in Section 1604.1, 1604.2, or 1604.3, or that was certified by the manufacturer pursuant to Sections 1605(a)(3)(E) and 1605(a)(4), the Executive Director shall perform a second test using the applicable test procedure specified in section 1603.

(2) Second test; mean of results. If a second test is performed, the Executive Director shall calculate the mean of the results of the initial test and the second test.

(A) Performance is as required by standard and as certified by manufacturer. If the mean of the two results indicates that the energy consumption of the model is no greater than, or the energy efficiency of the model is no less than, the consumption or efficiency permitted or required by the applicable standard in Section 1604.1, 1604.2, or 1604.3, and as reported or certified by the manufacturer pursuant to Sections 1605(a)(3)(E) and 1605(a)(4), the matter shall be closed.

(B) Performance is as required by standard but is not as reported or certified by manufacturer. If the mean of the two results indicates that the energy consumption of the model is greater, or the energy efficiency of the model is less, than the consumption or efficiency as reported or certified by the manufacturer pursuant to Sections 1605(a)(3)(E) and 1605(a)(4), but that the model nevertheless complies with the applicable standard in Section 1604.1, 1604.2, or 1604.3, the Commission shall undertake a proceeding pursuant to Sections 11445.10-11445.60 of the California Government Code (or, at the manufacturer's option, pursuant to Sections 11425.10-11425.60 of the California Government Code). If the Commission determines that that the energy consumption of the model is greater, or the energy efficiency of the model is less, than the consumption or efficiency as reported or certified by the manufacturer pursuant to Sections 1605(a)(3)(E) and 1605(a)(4), but that the model nevertheless complies with the applicable standard in Section 1604.1, 1604.2, or 1604.3, the Executive Director shall modify the listing of the model in the database to reflect accurately the Commission's determination.

(C) Performance is not as required by standard. If the mean of the two test results indicates that the model does not comply with the applicable standard in Section 1604.1, 1604.2, or 1604.3, the Commission shall undertake a proceeding pursuant to Sections 11445.10-11445.60 of the California Government Code (or, at the manufacturer's option, Sections 11425.10-11425.60 of the California Government Code). If the Commission determines that the model does not comply, the Executive Director shall remove the model from the database established pursuant to section 1605(d).

(3) Costs. All costs of initial tests showing results as described in section 1608(c)(1)(A) shall be borne by the Commission. All costs of all other tests shall be paid by the manufacturer.

(4) Federally-Regulated Appliances. If the appliance model tested is a federally-regulated consumer product or federally-regulated commercial and industrial equipment, in addition to the applicable actions described in Sections 1608(c)(1) and 1608(c)(2), the Executive Director shall inform the U.S. Department of Energy if the test results show that the model does not comply with the applicable federal standard.

ENERGY EFFICIENCY STANDARDS FOR
RESIDENTIAL AND NONRESIDENTIAL BUILDINGS

CALIFORNIA CODE OF REGULATIONS
TITLE 24, PART 6

Subchapter 2

All Occupancies—Mandatory Requirements For The Manufacture, Construction And

Installation Of Systems, Equipment And Building Components.

Section 100 – Scope

(a) **Buildings Covered**. The provisions of Title 24, Part 6, apply to all buildings:

1. That are of Occupancy Group A, B, E, F, H, M, R, or S; and

2. For which an application for a building permit or renewal of an existing permit is filed (or is required by law to be filed) on or after the effective date of the provisions, or which are constructed by a governmental agency; and

3. That are:

   A. Directly or indirectly conditioned by mechanical heating or mechanical cooling; or

   B. Low-rise residential buildings that are heated with a wood heater or another nonmechanical heating system; or

   C. Semiconditioned nonresidential occupancies.

EXCEPTION 1 to Section 100 (a): Qualified historic buildings, as defined in the State Historic Building Code (Title 24, Part 8).

EXCEPTION 2 to Section 100 (a): Building departments, at their discretion, may exempt temporary buildings or structures erected in response to a natural disaster. Temporary buildings or structures shall be completely removed upon the expiration of the time limit stated in the permit.

(b) **Parts of Buildings Regulated**. The provisions of Title 24, Part 6, apply to the building envelope, space-conditioning systems, water-heating systems, and lighting systems of buildings covered by Section 100 (a) as set forth in Table 1-A.

(c) **Floors and Habitable Stories**.

1. Only habitable floors that have at least 50 percent of their volume above grade as defined in the UBC shall be counted in determining how many habitable stories a building has.

2. All conditioned space in a floor shall comply with Title 24, Part 6, whether or not the floor is above grade and whether or not it is habitable.

TABLE 1-A—APPLICATION OF STANDARDS

BUILDING TYPE	MANDATORY	PERFORMANCE	PRESCRIPTIVE	ADDITIONS/ ALTERATIONS
All Occupancies	100 through 109 and 118	—	—	—
Nonresidential, high-rise residential, and hotels/motels All Envelope Mechanical Lighting	102, 110 through 139 — 120 through 129 130 through 139	141 141 141 141	142 through 146 143 144 and 145 146	149 149 149 149
Semiconditioned nonresidential buildings of an occupancy group listed in Section 100	119, 130 through 139	—	146	149 (b) 3
Low-rise residential	102, 110 through 118 and 150	151 (a) through (e)	151 (a), (f)	152

(d) **Sections Applicable to Particular Buildings**. Table 1-A and this subsection list the provisions of Title 24, Part 6, that are applicable to different types of buildings covered by Section 100 (a).

1. **All buildings**. Sections 100 through 109 and 118 apply to all buildings.

2. **New buildings**.

A. **All new buildings**. Sections 110 through 119 apply to all new buildings within the scope of Section 100 (a). In addition, new buildings shall meet the requirements of B or C, as applicable.

B. **Nonresidential, high-rise residential, and hotel/motel buildings that are mechanically heated or mechanically cooled**.

i. **Sections applicable**. Sections 120 through 146 apply to new nonresidential buildings, high-rise residential buildings, and hotels/motels that are mechanically heated or mechanically cooled.

ii. **Compliance approaches**. In order to comply with Title 24, Part 6, new nonresidential buildings, high-rise residential buildings, and hotels/motels that are mechanically heated or mechanically cooled must meet the requirements of:

a. Mandatory measures: The applicable provisions of Sections 120 through 139; and

b. Either:

Performance approach: Section 141; or

Prescriptive approach: Sections 142 through 146.

C. **Semiconditioned nonresidential buildings.** Sections 119, 130 through 132, and 146 apply to all new unconditioned buildings within the scope of Section 100 (a).

D. **Low-rise residential buildings that are heated or mechanically cooled.**

i. **Sections applicable**. Sections 150 through 151 apply to new low-rise residential buildings that are heated or mechanically cooled.

ii. **Compliance approaches**. To comply with Title 24, Part 6, new low-rise residential buildings that are heated or mechanically cooled must meet the requirements of:

a. Mandatory measures: The applicable provisions of Sections 110 through 119, and 150; and

b. Either:

Performance approach: Section 151 (a) through (e);

or

Prescriptive approach: Sections 151 (a) and (f).

EXCEPTION 1 to Section 100 (d) 2 D (ii) (II): Seasonally occupied agricultural housing limited by state or federal agency contract to occupancy not more than 180 days in any calendar year.

EXCEPTION 2 to Section 100 (d) 2 D (ii) (II): Low-rise residential buildings that are heated with a wood heater or another nonmechanical heating system and that use no energy obtained from depletable sources for lighting or water heating.

3. **New construction in existing buildings.**

A. **Nonresidential, high-rise residential, and hotel/motel buildings.** Section 149 applies to new construction in existing buildings that will be nonresidential, high-rise residential, and hotel/motel occupancies.

B. **Semiconditioned nonresidential buildings**. Section 149 (b) 3 applies to new construction in an existing semiconditioned building. If new construction results in newly conditioned space, Section 149 (a) shall apply.

C. **Low-rise residential buildings.** Section 152 applies to new construction in existing buildings that will be low-rise residential occupancies.

4. **Installation of insulation in existing buildings**. Section 118 applies to buildings in which insulation is being installed in existing attics, or on existing water heaters, or existing space conditioning ducts.

(e) **Mixed Occupancy**. When a building is designed and constructed for more than one type of occupancy, the space for each occupancy shall meet the provisions of Title 24, Part 6, applicable to that occupancy.

EXCEPTION to Section 100 (e): If one occupancy constitutes at least 90 percent of the conditioned floor area of the building, the entire building may comply with the provisions of Title 24, Part 6 applicable to that occupancy, provided that the applicable mandatory measures in Sections 110 through 139, and 150, are met for each occupancy.

(f) **Administrative Requirements**. Administrative requirements relating to permit requirements, enforcement by the commission, locally adopted energy standards, interpretations, claims of exemption, approved calculation methods, and rights of appeal are specified in California Code of Regulations, Title 24, Part 1, Sections 10-101 to 10-112.

(g) **Certification Requirements for Manufactured Devices**. Title 24, Part 6, limits the installation of the following manufactured devices to those that have been certified by their manufacturer to meet or exceed minimum specifications or efficiencies adopted by the commission.

1. Central air-conditioning heat pumps and other central air conditioners (Section 111 ~~and 112~~).
2. Combination equipment: space heating and cooling, or space heating and water heating ~~[Section 112 (a) 3]~~ [Section 111]
3. Fenestration products (Section 116).
4. Fluorescent lamp ballasts (Section 111).
5. Gas space heaters (Sections 111 and 112).
6. Insulating materials (Section 118).
7. Lighting control devices (Section 119).
8. Oil-fired storage water heaters (Section 113).
9. Other heating and cooling equipment (Sections 111 and 112).
10. Plumbing fittings (Section 111).
11. Pool heaters (Section 114).
12. Refrigerators, refrigerator-freezers, and freezers (Section 111).
13. Room air conditioners (Section 111).
14. Slab floor perimeter insulation [Section 150 (l)].
15. Water heaters (Section 113).

The certification status of any such manufactured device may be confirmed only by reference to:

1. A directory published or approved by the commission; or
2. A copy of the application for certification from the manufacturer and the letter of acceptance from the commission staff; or
3. Written confirmation from the publisher of a commission-approved directory that a device has been certified; or
4. A commission-approved label on the device.

NOTE to Section 100 (g): Title 24, Part 6, does not require a builder, designer, owner, operator, or enforcing agency to test any certified device to determine its compliance with minimum specifications or efficiencies adopted by the commission.

Section 110 – Systems And Equipment—General

Sections 111 through 119 establish requirements for the manufacture, construction, and installation of certain systems, equipment and building components that are installed in buildings regulated by Title 24, Part 6. Systems, equipment and building components listed below may be installed only if:

(a) The manufacturer has certified that the system, equipment or building component complies with the applicable manufacture provisions of Sections 111 through 119;

(b) The system, equipment or building component complies with the applicable installation provisions of Sections 111 through 119 ; and

(c) If the system, equipment, or building component is within the scope of the Appliance Efficiency Regulations, the system, equipment or building component and the manufacturer thereof comply with all the applicable requirements in those regulations.

No system, equipment or building component covered by the provisions of Sections 111 through 119 that is not certified or that fails to comply with the applicable installation requirements may be installed in a building regulated by Title 24, Part 6.

The systems, equipment and building components covered are:

Appliances regulated by the Appliance Efficiency Regulations (Section 111).

- 20 CCR 1601(a) refrigerators, refrigerator-freezers and freezers
- 20 CCR 1601(b) room air conditioners
- 20 CCR 1601(c) central air conditioners
- 20 CCR 1601(d) spot air conditioners
- 20 CCR 1601(e) gas space heaters
- 20 CCR 1601(f) water heaters
- 20 CCR 1601(g) pool heaters
- 20 CCR 1601(h) plumbing fittings

- 20 CCR 1601(i) plumbing fixtures
- 20 CCR 1601(j) fluorescent lamp ballasts
- 20 CCR 1601(k) lamps
- 20 CCR 1601(l) dishwashers
- 20 CCR 1601(m) clothes washers
- 20 CCR 1601(n) clothes dryers
- 20 CCR 1601(o) kitchen ranges and ovens
- 20 CCR 1601(p) television sets
- 20 CCR 1601(q) electric motors
- 20 CCR 1601(r) lighting control devices
- 20 CCR 1601(s) demand ventilation control devices

Other service water-heating systems and equipment (Section 113).
Pool and spa heating systems and equipment (Section 114).
Doors, windows, and fenestration products (Section 116).
Joints and other openings (Section 117).
Insulation (Section 118).
Lighting control devices (Section 119).

SECTION 111 – MANDATORY REQUIREMENTS FOR APPLIANCES REGULATED BY THE APPLIANCE EFFICIENCY REGULATIONS

Any appliance that is within the scope of the Appliance Efficiency Regulations may be installed only if the appliance and the manufacturer thereof comply with all the applicable requirements in those regulations, including but not limited to the listing of the appliance in a database approved by the Commission. See Appendix 1-A for availability of approved database

SECTION 112 (Reserved)

SECTION 113 – MANDATORY REQUIREMENTS FOR SERVICE WATER-HEATING SYSTEMS AND EQUIPMENT

(a) **Installation**. Any service water-heating system or equipment may be installed only if the system or equipment complies with all of the applicable requirements of this subsection for the system or equipment.

A water heater may be installed in non-residential occupancies only if it is equipped with automatic temperature controls capable of adjustment from the lowest to the highest acceptable temperature settings for the intended use as listed in Table 3, Chapter 45 of the 1995 ASHRAE Handbook, HVAC Applications Volume.

1. **Outlet temperature controls**. On systems that have a total capacity greater than 167,000 Btu/hr., outlets that require higher than service water temperatures as listed in the 1995 ASHRAE Handbook, HVAC Applications Volume, shall have separate remote heaters, heat exchangers, or boosters to supply the outlet with the higher temperature.

2. **Pumps for circulating systems**. Circulating service water-heating systems shall have a control capable of automatically turning off the circulating pump when hot water is not required.

   EXCEPTION to Section 113 (b) 2: Residential occupancies.

3. **Temperature controls for public lavatories**. The controls shall limit the outlet temperature to 110°F.

4. **Insulation**. Unfired service water heater storage tanks and backup tanks for solar water-heating systems shall have:

   A. External insulation with an installed R-value of at least R-12; or

   B. Internal and external insulation with a combined R-value of at least R-16; or

   C. The heat loss of the tank surface based on an 80°F water-air temperature difference shall be less than 6.5 Btu per hour per square foot.

5. **Service water heaters in state buildings**. Any new building constructed by the State shall derive its service water heating from a system that provides at least 60 percent of the energy needed for service water heating from site solar energy or recovered energy.

   EXCEPTION to Section 113 (b) 5: Buildings for which the state architect determines that service water heating from site solar energy or recovered energy is economically or physically infeasible.

SECTION 114 – MANDATORY REQUIREMENTS FOR POOL AND SPA HEATING SYSTEMS AND EQUIPMENT

(a) **Certification by Manufacturers**. Any pool or spa heating system or equipment may be installed only if the manufacturer has certified that the system or equipment has all of the following:

Electric resistance heating. Pool heaters shall not use electric resistance heating.

EXCEPTION 1 to Section 114 (a): Listed package units with fully insulated enclosures, and with tight-fitting covers that are insulated to at least R-6.

EXCEPTION 2 to Section 114 (a): Pools or spas deriving at least 60 percent of the annual heating energy from site solar energy or recovered energy.

(b) **Installation**. Any pool or spa heating system or equipment shall be installed with all of the following:

1. **Piping**. At least 36 inches of pipe between the filter and the heater to allow for the future addition of solar heating equipment; and

2. **Covers**. A cover for outdoor pools or outdoor spas; and

EXCEPTION to Section 114 (b) 2: Pools or spas deriving at least 60 percent of the annual heating energy from site solar energy or recovered energy.

3. **Directional inlets and time switches for pools**. If the system or equipment is for a pool:

A. The pool shall have directional inlets that adequately mix the pool water; and

B. The circulation pump shall have a time switch that allows the pump to be set to run in the off-peak electric demand period, and for the minimum time necessary to maintain the water in the condition required by applicable public health standards.

EXCEPTION to Section 114 (b) 3 B: Where applicable public health standards require on-peak operation.

SECTION 115 (Reserved)

SECTION 116 – MANDATORY REQUIREMENTS FOR FENESTRATION PRODUCTS AND EXTERIOR DOORS

No changes are proposed for Section 116

SECTION 117 – MANDATORY REQUIREMENTS FOR JOINTS AND OTHER OPENINGS

No changes are proposed for Section 117

SECTION 118 – MANDATORY REQUIREMENTS FOR INSULATION

No changes are proposed for Section 118

SECTION 119 – MANDATORY REQUIREMENTS FOR LIGHTING CONTROL DEVICES

Any automatic time switch control device, occupant-sensing device, automatic daylighting control device, lumen maintenance control device, or interior photocell sensor device may be installed only if the device is

installed in accordance with the manufacturer’s instructions; and if the device is a daylighting control device or a lumen maintenance control device, the device:

A. is installed so that automatic daylighting control devices control only luminaires within the daylit area; and

B. has photocell sensors that are either ceiling mounted or located so that they are accessible only to authorized personnel, and that are located so that they maintain adequate illumination in the area according to the designer's or manufacturer's instructions.